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OUTSIDE-BARK FORM CLASS VOLUME TABLES FOR SOME SOUTHERN APPALACHIAN SPECIES

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OUTSIDE-BARK FORM CLASS VOLUME TABLES FOR SOME SOUTHERN APPALACHIAN SPECIES[1/]

By

Jesse H. Buell, Associate Silviculturist

INTRODUCTION

Board-foot volume tables applicable to restricted localities are in continual demand. Public foresters need local tables for use on lands under their supervision or for helping farmers and other owners of small woodlands to prepare forest management plans. Private foresters need tables which will give dependable results in a wide variety of stands. Regional volume tables based on height and d.b.h. (diameter breast high) are often used locally with the hope that they are not too far off. Accumulated experience has shown that such regional tables vary in dependability. In some localities of the region, accurate estimates result from their use; in others, estimates have been found to be in considerable error. Aside from mistakes in application, including neglect to obtain accurate local cull figures, two factors are primarily responsible for the failure of carefully made regional tables to provide consistently accurate results. Possibly the less important of these factors are differences between limits of utilization as practiced, and those assumed in the table. Stump heights and top utilization not only differ within a region, but vary with economic conditions, and may thus depart from the utilization standards used in the table. The more important factor is the variation within a region of the form, or bole taper, of a given species. Application of a regional volume table, which gives volumes of trees of average taper for the region in each diameter-height class, will not give reliable results for a tract wherein relation of tree taper to diameter and height differs from that of the regional average. Even

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1/To answer the many requests for these volume tables, they are being issued in this temporary form to serve until after the present emergency when they may be printed.

though the additional accuracy of local volume tables is urgently desired, the construction of local volume tables by means of stem measurements remains a task for which many practicing foresters do not feel that time is available.

One solution of this problem, a partial one at least, is the preparation of regional tables which give tree volumes for various combinations of d.b.h., merchantable height and form class. Such tables serve as reference bases from which volume tables for local use can be made through simple arithmetical procedures when once a knowledge of tree form in a particular locality is accumulated.

Tables are here presented for 16 important species of the Appalachian and mid-Atlantic states. Each table gives tree volumes by various combinations of d.b.h. and merchantable height for a fixed "outside-bark" form class, but provision is made for converting the volumes, by a simple multiplication, to volumes for any other form class that may be encountered.

The fact must be emphasized that, unless these basic tables are modified and corrected for the form classes prevailing in the stands to be cruised, they may prove to be less accurate for a given locality than a well prepared set of regional tables based on diameter and height only. Directions for this modification are presented in the section entitled, "Use of Basic Tables in Making Local Tables."

DEFINITIONS OF FORM CLASS

It is essential that the reader attain a thorough understanding of the distinction between inside-bark form class and the outside-bark form class used to express tree taper in the tables presented. Outside-bark form class is defined as the percent which the diameter outside bark at the top of the first 16.3-foot log is of the diameter outside bark at breast height (4.5 feet above the ground). Inside-bark form class is defined as the percent which the diameter inside bark at the top of the first 16.3-foot log is of the diameter outside bark at breast height. Both types of form class are ratios of diameter at the top of the first 16.3-foot log to diameter at breast height; the difference is, for outside bark form class the upper diameter is measured or estimated outside bark, but for the inside-bark form class this upper diameter is measured or estimated inside bark.

A major advantage of the outside-bark form class is that the necessary measurement at the top of the first 16-foot log of a standing tree can be taken directly without determination of bark thickness. Thus a dendrometer, an instrument for measuring upper diameters of standing trees by sighting through a telescope, which can obviously read only outside-bark diameters, can be used in measuring outside-bark form classes; and if trees are to be climbed to measure the upper diameter, outside-bark

form classes can be obtained without measuring bark thickness. It is also believed that the man lacking special skill can more readily become proficient in reliable ocular estimates of outside-bark form class because considerations of bark thickness are not necessary.

DISTRIBUTION OF FORM CLASS IN FOREST STANDS

The ways in which both inside- and outside-bark form class are correlated with diameter class or merchantable length in forest stands are not yet well understood. Preliminary studies have indicated that such correlations show considerable variability. In some localities the form class for a given species increased as d.b.h. increased. In others a decrease in form class was associated with increasing d.b.h. It was found that no correlation whatever between form class and either d.b.h. or merchantable height existed in many localities, and an average for a given species, irrespective of tree size, was a satisfactory expression of form class.

Because no general rules can yet be presented on the distribution of form classes over the range of tree sizes for the 16 species for which volume tables are presented, it is essential that the nature of such distributions be determined locally if the accuracy of a volume table made up from local data is desired.

METHOD USED IN MAKING BASIC TABLES

The basic tables were prepared from equations derived by multiple regression, the logarithm of board-foot volume being expressed in terms of three independent variables: (1) logarithm of d.b.h. in inches, (2) logarithm of merchantable height in feet, and (3) outside-bark form class. Measurements from individual trees were used, without grouping. The full effect of o.b. form class measured separately for each tree is thus shown in the equations, and consequently they may be used to obtain unusually accurate estimates of the volumes of trees for each of which the o.b. form class is known in addition to the d.b.h. and merchantable height.

To save space, each table was made up only for the average o.b. form class of the trees basic to the table. Multipliers for converting the tabular volumes to volumes of trees of any other o.b. form class are given at the bottom of the table, along with an example showing how to make the conversion.

UTILIZATION LIMITS, SCALING METHODS AND LOG SCALES USED IN BASIC DATA

The tables give volumes to a variable top diameter, as actually utilized. A discussion of the relation of utilized top diameter to d.b.h. has already been given by Barrett,[2/] much of the data basic to the present tables having been previously used by him. Field measurements for each tree were plotted on cross-section paper and smooth curves drawn through the plotted points. The trees were then rescaled, using small-end diameters of logs read from the curves. Log lengths as actually cut were used as often as possible, but all log lengths were made an even multiple of 2 feet plus a trimming allowance of 0.3 feet, and all cull sections were included as though they were sound. Log volumes for International, Scribner, and Doyle-Scribner rules were read from tables made up from formulas to read to the nearest 2 feet of log length and to the nearest 0.1 inch of diameter. Following custom, Scribner Decimal C volumes are shown in the tables to the nearest 10 board feet; for the other log rules, volumes are shown to the nearest board foot. The Doyle-Scribner tables give volumes by the Doyle formula for all logs up to 24.9 inches in diameter, and by Scribner formula for larger logs. The Doyle formula was applied strictly, even to the small logs. In other words, logs 8 inches or less in diameter were not given a board-foot value equal to their length in feet as is the custom in parts of the Southeast.

TABLES FOR SPECIES GROUPS

Grouped-species tables are supplied for use of those who, for the sake of the convenience of having a smaller number of tables to handle, are willing to sacrifice something in accuracy. A pair of species was considered suitable for grouping if a comparison of the individual-species volume tables showed that for small, medium, and large trees, the volumes did not vary more than 6 percent from the mean of the two tables. The groups used are those that seemed most logical among the possible ones. The equation for any group was derived by adding the equations for the species in the group and dividing by the number of species. Each species is thus given equal weight regardless of the number of sample trees in the species.

USE OF BASIC TABLES IN MAKING LOCAL TABLES

The chief usefulness of the volume tables presented here depends on the fact that the average form of trees, or the relation of tree form to

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2/Barrett, L. I. Recent volume tables for some southern Appalachian species. Appalachian Forest Exp. Sta. Tech. Note 19. Feb. 1936.

d.b.h. or height, or both, may differ from locality to locality. Because of this, the tables may be used as a base from which local volume tables can be derived. Such derived tables will usually not be quite as accurate as tables based on d.b.h. and height made from a generous amount of representative local data, but the labor involved is much less and the results are more accurate than could be obtained from an ordinary regional volume table wherever the relation of form to d.b.h. and height differs locally from the average regional relation of form to d.b.h. and height.

In the locality where one of the tables is to be used, the d.b.h., merchantable height, and o.b. form class of a sufficient number of trees of the species concerned should be measured to determine whether o.b. form class is correlated with d.b.h. or with merchantable height (or with both). For such correlations, o.b. form classes should be taken on 30 to 50 trees well distributed throughout the diameter range present. O.b. form class can be determined by measuring o.b. diameters at the top of the first 16.3-foot log on felled trees. On standing trees it can be measured by climbing, or with a dendrometer, or it can be estimated. Estimates, checked as frequently as possible by measurements, may be accurate enough when made by a practiced individual. O.b. diameters at the top of the first log are divided by d.b.h.o.b. and multiplied by 100 to get o.b. form classes. Plot o.b. form class over d.b.h. and then over merchantable height to see where the greater correlation lies. (If greater refinement is desired, more data can be collected and the plotting of o.b. form class made over d.b.h. by merchantable height classes.) Fit a free-hand curve to the plotting showing the closer correlation, and from it read the average o.b. form class by d.b.h. classes, or height classes (or both if separate plottings are made over d.b.h. by height classes). For each average o.b. form class thus obtained, read the corresponding multiplier from the tabulation appended to the volume table and apply it to the proper part of the basic table.

If there is no correlation between o.b. form class and d.b.h., or merchantable height, then the multiplier corresponding to the mean o.b. form class can be applied to the whole basic table.

An example will make the procedure clearer.

EXAMPLE: CONSTRUCTION OF LOCAL TABLE

On the Bent Creek Experimental Forest where local Scribner board-foot volume tables were needed, d.b.h., merchantable height, and outside-bark form factor were measured on 59 black oak trees. Plotting showed that form class was correlated with d.b.h., but not with height. The relation of form class to d.b.h. for the 59 black oaks appeared to be linear, and a straight line was fitted to the data. The average form class for each 2-inch d.b.h. class as read from the plotted line is given

in the second column of the tabulation below. In the third column are entered the multipliers corresponding to these o.b. form classes, read from the table of multipliers appended to the black oak Scribner table (Table 31). The volumes in the tabulation were then computed by multiplying the values in a horizontal line of Table 31 by the multiplier entered for the particular d.b.h. class. Using the 20-inch d.b.h. class as an example, the 9, 15, 21, 26, 30, and 35 board-foot volumes read opposite 20 inches in Table 31, when multiplied by 1.10 give the 10, 16, 23, 29, 33 and 38 board-foot volumes shown opposite 20 inches in the local volume table.

Local Volume Table

Black Oak (Scribner Decimal C) - Bent Creek Experimental Forest

D.B.H.	Average o.b. form class	Multiplier	Number of 16.3-foot logs					
			½	1	1½	2	2½	3
In.			Gross volume in bd. ft. (Tens)					
12	85	1.02	3	5	6	8	9	11
14	85	1.02	4	7	9	11	13	15
16	86	1.05	5	9	13	16	19	22
18	87	1.08	8	13	17	22	26	29
20	88	1.10	10	16	23	29	33	38
22	89	1.13	12	22	29	36	43	49
24	90	1.16		27	37	45	53	61
26	90	1.16		32	44	55	65	74
28	91	1.19		39	54	67	79	90
30	92	1.22		48	65	81	94	109
32	93	1.25		55	74	93	110	126

This local volume table used for the black oak trees on 20.8 acres of cruise plots in the oak type on the Bent Creek Forest gave a total of 15,140 board feet of that species. The regional volume table made up from the data basic to the form class volume tables presented here, but based on d.b.h. and merchantable height alone, gave a total of 13,800 board feet for the same black oak trees. The difference amounts to nearly 10 percent of the volume obtained from the regional table.

Local tables made up from form class tables through the use of local data on the relation of form class to d.b.h. and height will be an improvement over regional tables whenever the relation of form class to d.b.h. and height differs locally from the average relation between these variables in the data basic to the regional table. In some instances a regional table may serve as a local table with little or no modification, but where accuracy is sought it would be unsafe to use the regional table without first testing it. Local tables will often differ more widely from regional tables than does the black oak table in this example.

CHANGING O.B. FORM CLASS TABLES TO I.B. FORM CLASS TABLES

Because individuals already accustomed to the use of inside-bark form classes may find that the volume tables presented here require an inconvenient departure from their usual procedures, a method of translating them to i.b. form class tables has been worked out. By use of multipliers calculated from the tabulation given below, the o.b. form class volume tables can be changed to i.b. form class tables. The translation is from a table of a certain o.b. form class to a table of a numerically equivalent i.b. form class--from o.b. form class 84, for instance, to i.b. form class 84.

The values of b and a in the tabulation depend on (1) the regression of bark thickness at the top of the first 16.3-foot log on d.b.h.o.b. and (2) the partial regression of logarithm of volume on o.b. form class as given in the equation accompanying each volume table. Item (2) changes with the log rule used. Consequently there are separate values of b and a for International, Scribner and Doyle-Scribner log rules.

Constants for the calculation of multipliers by which to transform o.b. form class volume tables to i.b. form class volume tables.

	International		Scribner		Doyle-Scribner	
	b	a	b	a	b	a
Eastern white pine	.0476	.0667	.0492	.0690	.0598	.0838
Loblolly pine	.0429	.8835	.0475	.9791	.0622	1.2813
Virginia pine	.0072	.2038	.0076	.2136	.0096	.2713
Shortleaf pine	.0132	.5433	.0143	.5868	.0182	.7466
Eastern hemlock	.0622	.3760	.0630	.3807	.0745	.4503
Sweet birch	.0760	-.1926	.0754	-.1911	.0908	-.2300
Eastern red oak	.0633	.3384	.0635	.3391	.0784	.4190
Scarlet oak	.0461	.4281	.0478	.4432	.0602	.5589
Black oak	.0557	.7957	.0544	.7762	.0655	.9351
White oak	.0361	.5364	.0365	.5425	.0449	.6676
Chestnut oak	.0649	.3836	.0630	.3725	.0755	.4464
Yellowpoplar	.1153	-.1884	.1196	-.1953	.1446	-.2361
Sugar maple	.0431	.8267	.0454	.8719	.0568	1.0889
Red maple	.0263	.4582	.0265	.4601	.0322	.5608
Basswood	.0501	.7235	.0518	.7479	.0647	.9344
White ash	.0669	.6687	.0684	.6838	.0845	.8442

logarithm $M = b + a\ (1/D)$.
where D = d.b.h.o.b.
and M = multiplier by which to transform o.b. form class volume table to i.b. form class volume table.

If D = d.b.h.o.b.,
F = numerical value of a form class, either o.b. or i.b., and
M = factor by which to multiply volume of a tree of o.b. form class F to get volume of a tree of the same d.b.h. and merchantable length with i.b. form class F,

then M may be calculated from the equation:

$$\text{logarithm } M = b + a\,(1/D).$$

For scarlet oak, for example, the tabulation shows that for the Scribner rule, b = .0478 and a = .4432. The equation for scarlet oak, Scribner rule is then:

$$\text{logarithm } M = .0478 + .4432\,(1/D)$$

making it evident that the multiplier will change with diameter. Below are given the values of the multiplier for scarlet oak, Scribner rule, by 2-inch diameter classes as worked out from the equation. Note that above about 18 inches the multipliers change very little, and 1.16 might be used with only slight error for all diameters 20 inches and larger. For some species and log rules the multiplier may change so little with diameter that one value could be used for all diameters.

Multipliers for scarlet oak, Scribner rule

b = .0478 a = .4432 log M = b + a (1/D)

D.B.H.	1/D	log M	M
10	.1000	.0921	1.24
12	.0833	.0847	1.22
14	.0714	.0794	1.20
16	.0625	.0755	1.19
18	.0556	.0724	1.18
20	.0500	.0700	1.17
22	.0455	.0680	1.17
24	.0417	.0663	1.16
26	.0385	.0649	1.16
28	.0357	.0636	1.16
30	.0333	.0626	1.16
32	.0312	.0616	1.15
34	.0294	.0608	1.15
36	.0278	.0601	1.15

D = d.b.h.o.b.
M = factor by which to multiply volume of a tree of o.b. form class F to get volume of a tree of i.b. form class F.

Table 30 of the o.b. form class volume tables gives Scribner Decimal C volumes for scarlet oaks of o.b. form class 87. If the values for

10-inch trees are multiplied by 1.24, those for 12-inch trees by 1.22, etc. (see multipliers for scarlet oak, above), there will result a table by 2-inch diameter classes for scarlet oaks of i.b. form class 87, Scribner Decimal C volume. Following is part of such a table from which volumes for 1/2-log length are omitted.

SCARLET OAK
I.B. FORM CLASS VOLUME TABLE
BOARD FEET-SCRIBNER DECIMAL C LOG RULE
I.B. FORM CLASS 87

D.B.H.	Number of 16.3-foot logs				
	1	2	3	4	5
In.	Gross volume in board feet (Tens)				
10	4	7	10		
12	6	10	15	17	
14	8	14	20	25	
:	:	:	:	:	
:	:	:	:	:	
:		:	:	:	:
36		135	183	228	269

If a table for some other i.b. form class, say 70, is wanted, the above table can be converted to it by using the multiplier for form class 70 given in the tabulation at the end of Table 30. This multiplier is .67. The Scribner Decimal C volume of 36-inch trees 2, 3, 4, and 5 logs, i.b. form class 70 are therefore, respectively, .67 x 135, .67 x 183, .67 x 228, and .67 x 269, or 90, 123, 153, and 180 tens of board feet.

The work of converting volumes (1) from o.b. form class to i.b. form class of the same numerical value, and then (2) to i.b. form class of some other numerical value can be combined into one job by using the product of the two multipliers concerned. In the example above, the multiplier for converting volumes of 36-inch trees from o.b. form class 87 to i.b. form class 87 is 1.15, and for converting form class 87 to form class 70 is .67. The multiplier for doing the two jobs at once is therefore 1.15 x .67 or .77. The results of converting volumes of 36-inch trees 2, 3, 4, and 5 logs, o.b. form class 87, directly to volumes of trees of the same d.b.h. and merchantable heights but of i.b. form class 70 are (see Form Class Volume Table 30): .77 x 117, .77 x 159, .77 x 198, and .77 x 234, or 90, 122, 152, and 180, the same results as before except for differences due to rounding off.

INDEX TO THE VOLUME TABLES

Species	Table Number		
	International	Scribner	Doyle-Scribner
Eastern white pine	1	23	45
Loblolly pine	2	24	46
Virginia pine	3	25	47
Shortleaf pine	4	26	48
Eastern hemlock	5	27	49
Sweet birch	6	28	50
Eastern red oak	7	29	51
Scarlet oak	8	30	52
Black oak	9	31	53
White oak	10	32	54
Chestnut oak	11	33	55
Yellowpoplar	12	34	56
Sugar maple	13	35	57
Red maple	14	36	58
Basswood	15	37	59
White ash	16	38	60
Group 1 (Eastern white pine and eastern hemlock)	17	39	61
Group 2 (Loblolly pine and yellowpoplar)	18	40	62
Group 3 (Virginia pine and shortleaf pine)	19	41	63
Group 4 (Sweet birch, sugar maple and red maple)	20	42	64
Group 5 (Scarlet, black, white and chestnut oaks)	21	43	65
Group 6 (Basswood and white ash)	22	44	66

TABLE 1.-EASTERN WHITE PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 82

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	23	37	49	60										
11	28	45	60	73	85									
12	33	54	72	88	102	116								
13	39	64	85	104	121	137	153							
14	46	75	99	121	141	161	179	196						
15	53	86	115	140	163	185	206	227	246					
16	61	99	131	160	187	212	237	259	282	303				
17	69	112	149	182	212	241	268	294	320	344				
18	78	126	168	205	240	272	303	333	361	388				
19	88	142	188	230	268	305	339	372	404	434				
20	97	158	209	256	298	339	378	414	450	484				
21	108	175	232	283	331	376	419	459	499	536	573			
22	119	193	256	313	365	414	461	506	550	592	632			
23	131	211	280	343	401	455	506	556	603	649	693			
24		231	307	375	438	498	553	608	659	710	759	805		
25		252	334	408	476	542	603	662	718	773	826	877		
26		274	363	444	518	589	655	719	780	840	897	953	1007	
27			393	480	561	637	710	778	845	908	970	1033	1091	
28			424	518	605	687	766	840	912	982	1047	1114	1178	1236
29			456	557	652	740	824	904	982	1057	1127	1199	1268	1334
30				598	700	794	883	970	1052	1132	1211	1285	1361	1432
31				641	750	851	946	1040	1127	1213	1297	1377	1459	1535
32				686	800	908	1012	1109	1205	1297	1387	1472	1556	1641
33					853	968	1079	1186	1285	1384	1479	1570	1660	1750
34					910	1033	1148	1262	1368	1472	1574	1675	1770	1862
35						1096	1222	1340	1455	1567	1675	1778	1879	1977
36						1164	1294	1422	1542	1660	1774	1888	1995	2099
37							1374	1507	1637	1758	1879	1995	2113	2223
38							1452	1592	1730	1862	1986	2113	2234	2355
39										1963	2099	2228	2360	2489
40										2070	2213	2355	2489	2618
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 210 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.73	.75	.77	.79	.81	.84	.86	.88	.90	.92
8	.95	.98	1.00	1.03	1.05	1.08	1.11	1.14	1.17	1.20
9	1.23	1.26	1.29	1.33	1.36					

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 160 x 1.29 = 206 bd. ft.
Basic data: 210 trees from Cherokee, Pisgah and Nantahala National Forests.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.097153 (logarithm d.b.h. inches) + .696569 (logarithm merch. ht. ft.) + .011186 (O.B.-Form Class) - 2.291899.
Average deviation of individual tree volumes from values estimated by the equation ±5.6 percent.
Aggregate difference: estimated values 0.92 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 2.-LOBLOLLY PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 86

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	21	34	44	54	63	72								
11	26	42	56	68	80	90	100	110						
12	33	52	69	84	98	111	124	136	147					
13	39	64	84	102	119	135	150	164	178	192				
14	47	76	100	122	143	161	180	197	213	230	245			
15	56	90	119	144	168	191	212	232	252	271	290	307		
16	65	105	139	169	197	223	248	272	294	317	338	359		
17	75	121	160	195	228	258	287	315	341	366	392	416		
18		139	184	224	262	296	330	362	392	421	450	478		
19		159	210	256	298	338	376	412	447	480	513	544		
20		180	238	290	337	383	425	466	505	542	579	615		
21			267	326	379	430	479	525	569	611	653	692		
22			299	365	425	481	535	586	635	684	730	774		
23			333	406	473	536	596	653	708	762	813	863		
24			369	450	524	594	661	724	785	843	902	957		
25			407	497	578	656	730	798	867	931	995	1054		
26				546	637	721	802	879	953	1023	1094	1161		
27				598	697	791	879	962	1042	1122	1197	1271		
28				653	760	863	959	1052	1140	1225	1309	1387		
29					828	940	1045	1143	1239	1334	1422	1510		
30					900	1019	1132	1242	1346	1445	1545	1641		
31					973	1104	1227	1343	1455	1567	1671	1774		
32						1191	1324	1452	1574	1690	1803	1914		
33						1282	1426	1563	1694	1820	1945	2065		
34						1377	1535	1679	1820	1959	2089	2218		
35						1479	1644	1803	1954	2099	2244	2382		
36						1585	1762	1928	2089	2249	2399	2547		
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 378 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.65	.66	.68	.70	.72	.74	.76	.78	.80	.83
8	.85	.87	.90	.92	.95	.97	1.00	1.03	1.06	1.09
9	1.12	1.15	1.18	1.21	1.24	1.28	1.31	1.35	1.39	1.43

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 169 x 1.18 = 199 bd. ft.
Basic data: 378 trees from piedmont and northern coastal plain counties of S. C.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.416605 (logarithm d.b.h. inches) + .686903 (logarithm merch. ht. ft.) + .011847 (O.B.-Form Class) - 2.740782.
Average deviation of individual tree volumes from values estimated by the equation: ±5.4 percent.
Aggregate difference: estimated values 0.25 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 3.-VIRGINIA PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	24	41	55	67	79	91	101	112						
11	30	50	68	84	99	113	126	139	152	164	176			
12	37	62	83	102	120	138	154	170	185	200	215			
13	45	74	100	123	144	165	185	204	223	240	258			
14	53	88	118	146	171	196	219	242	264	285	306			
15	62	103	138	171	201	230	257	283	309	333	358			
16	72	119	160	198	233	266	298	328	358	386	415			
17	82	137	184	227	267	306	342	378	411	445	476			
18	94	156	210	259	305	348	390	430	469	507	543			
19	106	177	238	293	345	394	442	488	531	574	615			
20	119	198	267	330	388	444	497	547	597	644	692			
21		222	298	368	434	496	555	612	667	721	773			
22		247	332	410	483	552	618	681	743	802	859			
23			368	454	535	611	684	753	822	887	953			
24				500	589	673	753	832	906	980	1050			
25							828	912	995	1074	1153			
26								998	1089	1175	1262			
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 179 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.70	.72	.74	.76	.78	.80	.82	.84	.86	.88
8	.90	.93	.95	.98	1.00	1.03	1.05	1.08	1.10	1.13
9	1.16	1.19	1.22	1.25	1.28	1.32	1.35	1.38	1.42	1.46

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 198 x 1.22 = 242 bd. ft.
Basic data: 179 trees from Cherokee and Nantahala National Forests.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.290421 (logarithm d.b.h. inches) + .732232 (logarithm merch. ht. ft.) + .010850 (O.B.-Form Class) - 2.481360.
Average deviation of individual tree volumes from values estimated by the equation: ±4.6 percent.
Aggregate difference: estimated values 0.20 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 4.-SHORTLEAF PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 89

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	25	41	56	69	81	93	104							
11	31	52	70	87	102	117	131	144						
12	38	64	86	107	126	144	161	178						
13	47	78	105	128	153	175	196	216						
14	56	93	126	155	183	209	234	259	282					
15	66	110	148	184	216	248	277	306	334					
16	77	128	173	214	253	289	324	358	390	422	453			
17	89	149	201	248	292	335	375	414	452	489	524			
18	103	171	231	285	336	385	432	475	519	561	603			
19	117	195	263	325	384	438	492	542	592	640	686			
20		221	298	368	434	497	556	614	670	724	776			
21		248	335	414	489	558	625	690	753	815	875			
22		278	375	463	546	625	700	773	843	912	977			
23			417	515	608	697	780	861	940	1014	1089			
24			462	572	674	771	865	955	1040	1125	1205			
25			510	631	745	851	955	1052	1148	1242	1334			
26				695	818	938	1050	1159	1265	1365	1466			
27				760	897	1026	1151	1271	1384	1496	1607			
28				830	980	1122	1256	1387	1514	1633	1754			
29				904	1067	1219	1368	1507	1644	1778	1910			
30				982	1156	1324	1483	1637	1786	1932	2070			
31				1062	1253	1432	1607	1774	1932	2089	2244			
32				1148	1352	1549	1734	1914	2089	2254	2421			
33				1236	1459	1667	1866	2061	2249	2432	2606			
34				1327	1567	1791	2004	2218	2415	2612	2805			
35				1426	1679	1923	2153	2377	2594	2805	3006			
36				1524	1799	2056	2307	2547	2773	2999	3221			
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 324 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7					.68	.70	.72	.74	.76	.78
8	.80	.82	.84	.86	.88	.90	.93	.95	.98	1.00
9	1.03	1.05	1.08	1.11	1.14	1.17	1.20	1.23	1.26	1.29

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 214 x 1.08 = 231 bd. ft.
Basic data: 324 trees from Cherokee and Nantahala National Forests; and northeastern South Carolina.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.419420 (logarithm d.b.h. inches) + .738404 (logarithm merch. ht. ft.) + .011091 (O.B.-Form Class) - 2.686446.
Average deviation of individual tree volumes from values estimated by the equation: ±6.0 percent.
Aggregate difference: estimated values 0.02 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 5.-EASTERN HEMLOCK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 85

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	24	37	48	58										
11	29	46	60	72	83									
12	36	56	73	88	101	114								
13	43	67	87	105	121	136								
14	51	79	103	124	143	161	178							
15	59	93	120	145	168	189	208							
16	69	107	139	168	194	218	241	263						
17	79	123	160	192	222	250	277	301	325					
18	90	140	182	219	253	284	315	343	370	396				
19	101	158	206	248	286	322	356	387	418	448				
20	114	177	231	278	321	361	399	434	470	502				
21	127	198	258	310	358	404	446	485	525	561				
22	141	220	286	345	398	448	496	540	582	624	664			
23	156	243	316	381	441	496	547	597	644	689	733			
24	171	268	348	420	485	546	603	658	710	759	807			
25		294	382	460	532	598	661	721	778	832	885			
26		321	418	504	581	652	723	787	849	910	968			
27		350	455	548	632	711	787	857	925	991	1054			
28		380	494	594	687	773	855	929	1005	1076	1143	1211		
29		411	535	644	743	836	925	1007	1086	1164	1239	1309		
30		444	577	695	802	904	998	1086	1175	1256	1337	1413		
31		479	621	748	865	973	1074	1172	1265	1352	1439	1521		
32		514	667	804	929	1045	1153	1259	1358	1452	1545	1637	1722	
33		551	716	863	995	1119	1239	1349	1455	1560	1660	1754	1845	
34		589	766	923	1067	1199	1324	1442	1556	1667	1774	1875	1977	
35			818	984	1138	1279	1413	1542	1663	1782	1892	2004	2158	
36			871	1050	1213	1365	1507	1641	1770	1897	2018	2133	2249	
37			927	1117	1288	1452	1603	1746	1884	2018	2148	2270	2393	
38				1186	1371	1542	1702	1854	2004	2143	2280	2410	2543	
39				1259	1452	1633	1807	1968	2123	2275	2421	2559	2692	
40				1330	1538	1730	1914	2084	2249	2410	2559	2710	2851	
41				1409	1626	1828	2023	2203	2377	2547	2710	2864	3013	
42				1486	1718	1932	2133	2328	2512	2685	2858	3020	3184	
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 112 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes:

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7					.76	.78	.80	.82	.84	.86
8	.89	.91	.93	.95	.98	1.00	1.03	1.05	1.08	1.10
9	1.13	1.16	1.19	1.22	1.25	1.28	1.31	1.34	1.37	1.41

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 168 x 1.19 = 200 bd. ft.
Basic data: 112 trees from Cherokee, Pisgah and Nantahala National Forests; and Bland County, Virginia.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.259927 (logarithm d.b.h. inches) + .646370 (logarithm merch. ht. ft.) + .010605 (O.B.-Form Class) - 2.375710.
Average deviation of individual tree volumes from values estimated by the equation: ±6.9 percent.
Aggregate difference: estimated values 0.27 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 6.-SWEET BIRCH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs												
	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
In.	Gross volume in board feet													
10	20	35	47	59										
11	25	43	58	73										
12	31	52	71	89										
13	37	62	85	106	125									
14	43	74	100	125	148									
15	51	86	117	146	173									
16	58	99	135	168	200	230								
17	67	114	155	193	229	263								
18	76	129	176	219	260	298	336	372						
19	86	146	199	248	294	337	379	420						
20	96	164	223	277	329	378	426	471						
21	108	182	249	310	367	422	474	525						
22	119	202	276	344	407	468	526	585						
23	132	224	305	379	450	518	582	644						
24	145	246	336	418	496	569	640	708						
25		269	367	457	542	624	702	776						
26		294	402	500	593	681	766	847						
27		321	436	543	644	741	834	923						
28		348	474	590	700	804	904	1000						
29		376	513	638	757	869	977	1081						
30		406	553	689	817	938	1054	1167						
31		436	596	741	879	1009	1135	1256						
32		469	638	794	942	1084	1219	1349						
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 54 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6			.64	.65	.67	.68	.70	.71	.72	.74
7	.75	.77	.79	.80	.82	.83	.85	.87	.89	.90
8	.92	.94	.96	.98	1.00	1.02	1.04	1.06	1.08	1.11
9	1.13	1.15	1.18	1.20	1.22	1.25	1.27	1.30	1.33	1.35

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 168 x 1.02 = 171 bd. ft.
Basic data: 54 trees from Pisgah and Nantahala National Forests: and Bland County, Virginia.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.239227 (logarithm d.b.h. inches) + .762725 (logarithm merch. ht. ft.) + .008761 (O.B.-Form Class) - 2.359875.
Average deviation of individual tree volumes from values estimated by the equation: ±6.3 percent.
Aggregate difference: estimated values 0.35 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 7.-EASTERN RED OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 85

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	20	34	46	57	68	78								
11	25	42	58	71	84	96								
12	31	52	70	87	103	118								
13	37	62	84	104	123	141	158							
14	44	73	100	123	146	167	187							
15	51	86	116	144	170	195	219	242						
16	59	100	135	167	197	226	254	280						
17	68	114	154	191	226	259	291	321						
18	78	130	176	218	258	296	331	366	400					
19	88	147	199	247	292	334	375	414	452					
20	99	166	224	277	327	375	421	466	508					
21		185	250	310	366	420	471	520	568	614				
22		206	278	344	406	467	524	578	631	682				
23		228	308	381	450	515	578	640	698	755				
24		251	339	420	496	569	637	703	769	832				
25		275	372	460	544	624	700	773	843	912				
26		301	406	504	596	682	766	845	923	998				
27		327	443	550	649	743	834	920	1005	1086				
28		356	481	597	705	807	906	1000	1091	1180				
29		386	521	646	762	873	980	1084	1183	1279				
30		416	562	698	824	944	1059	1169	1276	1380				
31		449	607	752	887	1019	1140	1262	1377	1489				
32		482	652	807	953	1094	1227	1355	1479	1600				
33		516	700	867	1023	1172	1315	1452	1585	1718				
34		553	748	927	1096	1256	1409	1556	1698	1837				
35		590	800	991	1169	1340	1503	1660	1816	1963				
36		630	853	1057	1247	1429	1603	1770	1936	2094				
37			908	1125	1327	1521	1706	1884	2061	2228				
38			964	1197	1409	1614	1811	2004	2188	2366				
39			1023	1268	1496	1714	1923	2123	2323	2512				
40			1084	1343	1585	1816	2037	2249	2460	2661				
41				1419	1675	1923	2158	2382	2600	2812				
42				1500	1770	2028	2275	2512	2748	2972				
43				1581	1866	2143	2404	2655	2897	3133				
44				1667	1968	2254	2529	2799	3055	3304				
45				1754	2070	2371	2661	2944	3214	3475				
46				1845	2178	2495	2799	3097	3381	3656				
47				1936	2286	2618	2938	3251	3548	3837				
48				2032	2399	2748	3083	3404	3715	4027				

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Block indicates extent of basic data for all O.B.-Form Classes.

Table above is for the average O.B.-Form Class of the 280 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5							.64	.65	.67	.68
6							.81	.83	.85	.87
7	.70	.72	.73	.75	.77	.79	1.02	1.05	1.07	1.10
8	.89	.91	.93	.95	.98	1.00	1.30	1.33	1.36	1.40
9	1.13	1.16	1.18	1.21	1.24	1.27				

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 167 x 1.18 = 197 bd. ft.

Basic data: 280 trees from Cherokee, Pisgah, and Nantahala National Forests: Jackson County, Ohio; Garrett County, Md; Tucker County, W. Va; and Bland County, Va.

Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.274411 (logarithm d.b.h. inches) + .745902 (logarithm merch. ht. ft.) + .010369 (O.B.-Form Class) - 2.526032.

Average deviation of individual tree volumes from values estimated by the equation: ±6.6 percent.

Aggregate difference: estimated values 0.12 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 8.-SCARLET OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	23	38	52	64	76	87								
11	28	47	64	80	94	108	121							
12	34	58	78	97	115	131	147	163						
13	41	69	94	116	137	157	177	195						
14	49	82	111	137	162	186	209	231	252					
15	57	96	130	161	190	218	244	270	295					
16	66	111	150	186	220	252	282	313	341	369				
17	76	127	172	213	252	289	324	358	392	424				
18	86	145	196	243	287	330	370	408	446	482				
19	98	164	222	275	325	372	418	461	504	546				
20	110	184	249	309	365	418	469	519	566	612				
21	122	206	278	345	407	467	524	579	632	684				
22	136	228	309	384	453	519	582	643	703	760				
23	150	252	342	424	501	574	644	711	778	841				
24	166	278	377	467	552	632	710	783	857	927				
25	182	305	413	513	605	693	778	859	940	1016				
26		333	452	560	662	759	851	940	1028	1112				
27		363	492	611	721	826	927	1023	1119	1211				
28		394	535	662	783	897	1007	1112	1216	1315				
29		428	578	718	847	970	1091	1205	1315	1422				
30		461	625	774	916	1050	1178	1300	1419	1538				
31		498	673	836	986	1130	1268	1403	1531	1656				
32		535	723	897	1059	1213	1361	1507	1644	1778				
33			776	962	1138	1303	1462	1614	1762	1910				
34			830	1030	1216	1393	1563	1730	1888	2042				
35				1099	1300	1489	1671	1845	2014	2183				
36				1172	1384	1585	1782	1968	2148	2323				
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 213 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.62	.63	.65	.66
7	.68	.69	.71	.72	.74	.76	.78	.79	.81	.83
8	.85	.87	.89	.91	.93	.96	.98	1.00	1.02	1.05
9	1.07	1.10	1.12	1.15	1.18	1.20	1.23	1.26	1.29	1.32

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 186 x 1.12 = 208 bd. ft.
Basic data: 213 trees from Cherokee, Pisgah, Nantahala, and Chattahoochee National Forests; Bland County, Va; and Chatham County, N. C.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.269024 (logarithm d.b.h. inches) + .747475 (logarithm merch. ht. ft.) + .009994 (O.B.-Form Class) - 2.462957.
Average deviation of individual tree volumes from values estimated by the equation: ±4.8 percent.
Aggregate difference: estimated values 0.27 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 9.-BLACK OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	20	33	45	56	66	76								
11	24	41	56	69	82	94								
12	30	50	68	84	100	115	128							
13	36	60	81	101	120	137	154	171						
14	42	71	96	120	142	163	182	202	220					
15	49	83	113	140	166	190	213	236	258					
16	57	96	131	162	192	220	247	274	298					
17	65	110	150	186	220	252	284	313	343					
18	74	126	171	212	251	288	323	357	390					
19	84	142	193	239	283	325	366	404	442					
20	95	160	217	269	318	365	410	454	496					
21		178	242	301	356	408	458	507	553					
22		198	269	334	395	454	509	564	615					
23		219	298	370	438	501	564	622	681					
24		242	328	407	482	552	621	686	750					
25		265	360	447	528	605	681	753	822					
26		290	394	489	578	662	745	824	900					
27		316	428	532	630	723	811	897	980					
28		343	466	578	684	785	881	975	1064					
29		371	504	625	740	849	955	1054	1153					
30		401	544	676	800	916	1030	1138	1245					
31		432	586	728	861	989	1109	1227	1343					
32		463	630	782	925	1062	1191	1318	1442					
33		498	676	840	993	1138	1279	1413	1545					
34		532	723	897	1062	1219	1368	1514	1656					
35		569	773	959	1135	1300	1462	1618	1766					
36		607	822	1023	1208	1387	1560	1722	1884					
37		646	875	1086	1288	1476	1660	1832	2004					
38			931	1156	1368	1570	1762	1950	2128					
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 150 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6									.66	.68
7	.70	.72	.73	.75	.77	.79	.81	.84	.86	.88
8	.90	.93	.95	.98	1.00	1.03	1.05	1.08	1.11	1.14
9	1.17	1.20	1.23	1.26	1.29	1.32	1.36	1.40	1.43	1.47

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 162 x 1.23 = 199 bd. ft.
Basic data: 150 trees from Cherokee, Nantahala and Chattahoochee National Forests; Jackson County, Ohio; and Bland County, Virginia.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.270779 (logarithm d.b.h. inches) + .753428 (logarithm merch. ht. ft.) + .011131 (O.B.-Form Class) - 2.599530.
Average deviation of individual tree volumes from values estimated by the equation: ±6.1 percent.
Aggregate difference: estimated values 0.23 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 10.-WHITE OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	22	35	46	56	65									
11	27	43	58	70	82	93								
12	33	53	71	86	100	114								
13	40	65	85	104	121	137	153							
14	48	77	102	124	144	164	182							
15	56	91	120	146	170	193	215							
16	65	105	139	170	198	224	250	274						
17	75	122	161	196	229	259	288	316						
18	86	139	184	224	262	296	330	362	393					
19	98	158	209	255	298	337	375	411	446					
20	111	179	236	288	336	380	424	463	504	541				
21	124	200	265	323	377	427	475	521	565	608				
22	139	223	296	361	421	476	530	581	631	678				
23	154	248	328	400	467	530	589	646	700	753				
24	170	275	363	443	516	585	652	713	774	832				
25		302	400	488	569	644	716	785	853	916				
26		332	438	535	624	708	787	863	935	1007				
27		363	480	585	682	773	861	942	1023	1099				
28		395	522	637	749	843	938	1028	1114	1199				
29		430	568	692	807	916	1019	1114	1211	1303				
30		464	615	750	875	991	1102	1208	1309	1409				
31		502	665	811	946	1072	1191	1306	1419	1524				
32		542	716	873	1007	1153	1285	1406	1528	1641				
33		582	771	940	1096	1242	1380	1514	1644	1766				
34		625	826	1009	1175	1334	1483	1626	1762	1897				
35		670	885	1079	1259	1426	1589	1742	1888	2028				
36		714	946	1153	1346	1524	1698	1858	2018	2168				
37			1009	1230	1435	1626	1811	1986	2153	2312				
38			1074	1309	1528	1734	1928	2113	2291	2466				
39			1143	1393	1626	1845	2051	2249	2438	2618				
40			1213	1479	1726	1959	2178	2388	2588	2780				
41				1567	1828	2075	2307	2529	2742	2951				
42				1660	1936	2193	2443	2673	2904	3119				
43				1754	2046	2323	2582	2831	3069	3304				
44				1854	2163	2449	2729	2985	3243	3483				
45				1954	2280	2582	2871	3148	3420	3673				
46				2061	2399	2723	3027	3319	3597	3873				
47				2173	2523	2864	3184	3491	3784	4074				
48				2275	2655	3006	3342	3664	3981	4276				

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 688 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.45	.46	.48	.49	.50	.51	.52	.54	.55	.56
6	.57	.59	.60	.61	.63	.64	.66	.67	.69	.71
7	.72	.74	.76	.78	.79	.81	.83	.85	.87	.89
8	.91	.93	.96	.98	1.00	1.02	1.05	1.07	1.10	1.12
9	1.15	1.18	1.20	1.23	1.26	1.29	1.32	1.35	1.38	1.42

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 170 x 1.20 = 204 bd. ft.
Basic data: 688 trees from Cherokee, Pisgah, Nantahala, and Chattahoochee National Forests; Jackson County, Ohio; Garrett County, Maryland; Hardy County, W. Va.; Bland County, Virginia; and Chatham County, North Carolina.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.361718 (logarithm d.b.h. inches) + .689234 (logarithm merch. ht. ft.) + .010075 (O.B.-Form Class) - 2.502791.
Average deviation of individual tree volumes from values estimated by the equation: ±6.2 percent.
Aggregate difference: estimated values 0.40 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 11.-CHESTNUT OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 86

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	20	33	44											
11	25	41	55	67	79	90								
12	31	50	67	82	96	110								
13	37	61	81	99	116	133								
14	44	72	96	118	139	158								
15	52	85	113	139	163	186	208							
16	60	99	132	162	190	216	242							
17	70	114	152	187	219	249	278							
18	80	131	175	214	251	286	319							
19	90	148	198	243	284	324	361	398						
20	102	167	223	274	321	366	408	449						
21	114	188	250	307	360	410	458	504						
22	128	209	279	343	402	457	510	562						
23	142	232	310	380	446	508	568	624	678					
24	156	256	343	421	493	561	627	689	750					
25	172	282	377	463	543	618	690	759	826					
26	189	310	414	508	596	678	757	832	906	977				
27	206	339	452	555	652	741	828	910	991	1067				
28	225	369	493	605	710	807	902	991	1079	1161				
29		401	535	656	769	877	980	1076	1169	1262				
30		434	579	711	834	951	1059	1167	1268	1368				
31		469	627	769	902	1026	1146	1259	1371	1476				
32		505	674	828	970	1104	1233	1355	1476	1592				
33		543	724	889	1042	1189	1327	1459	1589	1710				
34		582	778	955	1119	1276	1422	1567	1702	1837				
35		624	834	1023	1199	1365	1524	1675	1824	1963				
36		667	889	1091	1282	1459	1629	1791	1950	2099				
37			948	1164	1368	1556	1738	1910	2080	2239				
38			1012	1242	1455	1656	1849	2032	2213	2382				
39			1074	1318	1545	1762	1968	2163	2350	2535				
40			1140	1400	1641	1871	2089	2296	2495	2692				
41			1208	1483	1742	1982	2213	2432	2642	2851				
42			1279	1570	1841	2094	2339	2570	2799	3020				
43				1660	1945	2218	2472	2723	2958	3192				
44				1754	2056	2339	2612	2871	3126	3365				
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 471 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.47	.48	.49	.50	.52	.53	.54	.55	.56	.57
6	.58	.60	.61	.62	.63	.65	.66	.67	.69	.70
7	.72	.73	.75	.76	.78	.80	.81	.83	.85	.86
8	.88	.90	.92	.94	.96	.98	1.00	1.02	1.04	1.06
9	1.09	1.11	1.13	1.16	1.18	1.20	1.23	1.26	1.28	1.31

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 162 x 1.01 = 164 bd. ft.
Basic data: 471 trees from Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio and Bland County, Virginia.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.353891 (logarithm d.b.h. inches) + .712861 (logarithm merch. ht. ft.) + .009012 (O.B.-Form Class) - 2.478711.
Average deviation of individual tree volumes from values estimated by the equation: ±6.2 percent.
Aggregate difference: estimated values 0.60 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 12.-YELLOWPOPLAR

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 88

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	23	38	50	62	72	82	92	101						
11	29	47	63	77	90	102	114	125						
12	35	57	76	93	109	124	139	152						
13	42	68	91	112	131	149	166	182						
14	50	81	108	132	154	176	196	215	234					
15	58	95	126	154	181	206	229	252	274					
16	67	109	146	179	209	238	265	291	316					
17	77	125	167	205	239	272	304	334	363					
18		143	190	233	273	310	346	380	413					
19		161	215	263	308	351	391	430	467	502				
20		181	241	295	346	394	438	482	524	564				
21		202	269	330	386	438	490	538	585	630				
22		224	298	366	428	488	543	597	649	700				
23			330	405	474	540	601	661	718	773	828			
24			364	446	521	593	662	728	791	851	910			
25			399	489	572	650	726	798	867	933	998			
26			436	535	625	711	792	871	946	1021	1091			
27			474	582	681	774	863	948	1030	1112	1189			
28			515	631	740	841	938	1030	1119	1205	1291			
29			557	682	800	910	1014	1114	1211	1306	1396			
30			601	738	863	982	1094	1202	1306	1409	1507			
31			649	794	931	1059	1180	1297	1409	1517	1626			
32				853	998	1135	1268	1393	1514	1629	1742			
33				914	1072	1219	1358	1493	1622	1746	1871			
34				977	1146	1303	1452	1596	1734	1871	2000			
35				1045	1222	1390	1552	1706	1854	1995	2133			
36				1112	1303	1483	1652	1816	1972	2128	2275			
37				1183	1387	1578	1758	1932	2099	2259	2421			
38				1259	1472	1675	1866	2051	2228	2404	2570			
39					1560	1774	1982	2178	2366	2547	2723			
40					1652	1879	2099	2307	2506	2698	2884			
41					1746	1986	2218	2438	2649	2851	3048			
42					1845	2099	2339	2570	2793	3006	3221			
43						2213	2466	2710	2951	3177	3396			
44						2333	2600	2858	3105	3342	3581			
45						2455	2735	3006	3266	3516	3767			
46						2576	2871	3162	3436	3698	3954			
47							3013	3311	3606	3882	4150			
48							3162	3475	3776	4074	4355			

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 334 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.54	.56	.57	.59
7	.61	.62	.64	.66	.68	.70	.72	.74	.76	.78
8	.80	.82	.85	.87	.90	.92	.95	.97	1.00	1.03
9	1.06	1.09	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 179 x 1.12 = 200 bd. ft.
Basic data: 334 trees from Geo. Washington, Cherokee, Pisgah, and Nantahala National Forests; Jackson County, Ohio; Tucker County, W. Va; Bland County, Virginia; and Chatham County, N. C.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.256729 (logarithm d.b.h. inches) + .706620 (logarithm merch. ht. ft.) + .012070 (O.B.-Form Class) - 2.597145.
Average deviation of individual tree volumes from values estimated by the equation: ±6.8 percent.
Aggregate difference: estimated values 0.89 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 13.--SUGAR MAPLE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs											
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	21	35	46	56	65									
11	27	43	57	69	81	91								
12	32	52	69	84	98	111	124	136	147	158	169			
13	39	62	82	100	117	133	148	162	176	189	202			
14	46	74	98	119	139	157	175	191	208	223	239			
15	53	86	114	139	162	184	204	224	243	261	279			
16	62	100	132	161	187	212	236	259	280	302	322			
17	71	114	151	184	215	243	270	296	322	346	370			
18	81	130	172	209	244	277	308	337	366	394	421			
19	91	147	194	237	276	313	348	381	414	445	475			
20	102	164	218	266	310	351	390	428	464	499	533			
21		184	243	296	345	392	436	478	518	557	594			
22		204	270	329	384	436	484	531	575	619	661			
23		225	298	364	424	481	535	586	635	684	730			
24		248	328	400	467	530	589	646	700	753	804			
25		272	360	438	512	581	646	708	767	824	881			
26		297	393	480	558	634	705	773	838	902	962			
27		324	428	522	608	690	767	841	912	982	1047			
28		352	464	566	661	750	834	914	991	1067	1138			
29		380	502	612	714	811	902	989	1072	1153	1230			
30		410	542	661	771	875	973	1067	1156	1245	1327			
31		442	585	713	832	942	1047	1148	1247	1340	1432			
32		474	628	766	891	1012	1125	1233	1337	1439	1535			
33		508	673	820	957	1084	1205	1321	1432	1542	1648			
34		544	719	877	1023	1159	1291	1416	1535	1648	1762			
35		581	767	935	1091	1239	1377	1510	1637	1762	1879			
36		618	818	998	1164	1318	1466	1607	1746	1875	2004			
37		658	871	1062	1236	1403	1560	1710	1854	1995	2128			
38		698	925	1127	1315	1489	1656	1816	1972	2118	2265			
39		741	980	1194	1393	1581	1758	1928	2089	2249	2399			
40		785	1038	1265	1476	1675	1862	2042	2213	2377	2541			
41		830	1096	1337	1560	1770	1968	2158	2339	2512	2685			
42		875	1159	1413	1644	1866	2075	2275	2466	2655	2831			
43		923	1222	1489	1738	1968	2188	2399	2606	2799	2992			
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 105 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.64	.66	.68	.69
7	.71	.73	.74	.76	.78	.80	.82	.84	.86	.89
8	.91	.93	.95	.98	1.00	1.03	1.05	1.08	1.10	1.13
9	1.16	1.19	1.22	1.25	1.28	1.31	1.34	1.38	1.41	1.44

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 161 x 1.22 = 196 bd. ft.
Basic data: 105 trees from Pisgah and Nantahala National Forests.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.252352 (logarithm d.b.h. inches) + .689232 (logarithm merch. ht. ft.) + .010682 (O.B.-Form Class) - 2.446606.
Average deviation of individual tree volumes from values estimated by the equation: ±7.6 percent.
Aggregate difference: estimated values 0.20 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 14.-RED MAPLE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	23	37	49	59										
11	28	46	60	74	86									
12	34	56	74	90	105	120								
13	41	67	89	108	126	144								
14	49	79	105	128	150	171	190	208						
15	57	93	123	151	176	200	222	244						
16	67	108	143	175	204	232	258	283						
17	76	124	164	201	234	266	296	325						
18	87	141	188	229	267	304	338	372						
19	99	160	212	259	303	344	383	421						
20	111	180	239	292	341	387	430	473						
21		201	267	327	381	432	482	528						
22		224	297	363	425	482	537	589						
23		248	329	402	470	533	594	652						
24		274	363	444	519	589	656	719						
25		301	399	488	569	647	719	791						
26		329	436	533	624	708	789	865						
27		359	476	582	679	773	859	944						
28		390	518	632	740	840	935	1026						
29		423	561	686	802	910	1014	1112						
30		457	607	741	865	984	1094	1202						
31			655	800	933	1059	1180	1294						
32			703	859	1005	1140	1271	1393						
33			755	923	1079	1225	1361	1496						
34			809	989	1153	1312	1459	1603						
35				1057	1233	1403	1560	1714						
36				1127	1315	1496	1663	1828						
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 88 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.68	.70	.71	.73
7	.74	.76	.77	.79	.81	.83	.84	.86	.88	.90
8	.92	.94	.96	.98	1.00	1.02	1.04	1.07	1.09	1.11
9	1.14	1.16	1.19	1.21	1.24	1.26	1.29	1.32	1.35	1.38

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 175 x 1.02 = 178 bd. ft.
Basic data: 88 trees from Pisgah and Nantahala National Forests; Tucker County, W. Va; and Bland County, Virginia.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.299066 (logarithm d.b.h. inches) + .696904 (logarithm merch. ht. ft.) + .009272 (O.B.-Form Class) - 2.359544.
Average deviation of individual tree volumes from values estimated by the equation: ±6.6 percent.
Aggregate difference: estimated values 0.39 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 15.-BASSWOOD

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	21	35	47	57	67	77								
11	27	44	59	73	85	97								
12	34	55	73	90	105	120	134	147						
13	41	67	89	109	128	146	163	180						
14	49	80	107	132	154	175	195	215	234	252				
15	58	95	127	156	182	208	232	255	277	299				
16	68	111	149	182	214	244	272	298	325	350				
17	79	129	173	212	248	282	316	347	378	406				
18	91	149	199	244	286	326	363	399	434	468	501			
19	104	170	227	279	327	372	415	456	497	535	573			
20	118	193	258	316	371	422	471	518	562	607	649			
21		218	290	356	418	475	531	583	634	684	733			
22		244	326	400	469	533	596	655	711	767	820			
23		272	363	446	522	594	664	730	794	855	916			
24		303	404	496	581	661	738	811	881	951	1016			
25		334	446	547	641	730	815	895	975	1050	1125			
26		368	491	603	706	805	897	986	1074	1156	1239			
27		405	540	662	776	883	986	1084	1178	1271	1358			
28		442	590	723	847	966	1076	1186	1288	1390	1486			
29			643	789	925	1052	1175	1291	1403	1514	1618			
30			698	857	1005	1143	1276	1403	1524	1644	1762			
31			757	929	1089	1239	1384	1521	1656	1782	1910			
32			818	1005	1178	1340	1496	1644	1786	1928	2065			
33			883	1084	1271	1445	1614	1774	1928	2080	2228			
34				1167	1368	1556	1738	1910	2075	2239	2393			
35				1253	1469	1671	1866	2051	2228	2404	2576			
36				1343	1574	1791	2000	2198	2388	2576	2761			
37				1435	1683	1914	2138	2350	2559	2754	2951			
38				1535	1799	2046	2286	2512	2729	2944	3148			
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 140 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.58	.59	.61	.62
7	.64	.66	.68	.69	.71	.73	.75	.77	.79	.81
8	.83	.86	.88	.90	.92	.95	.97	1.00	1.03	1.05
9	1.08	1.11	1.14	1.17	1.20	1.23	1.27	1.30	1.33	1.37

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 182 x 1.14 = 207 bd. ft.
Basic data: 140 trees from Pisgah and Nantahala National Forests, North Carolina.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.460366 (logarithm d.b.h. inches) + .711270 (logarithm merch. ht. ft.) + .011366 (O.B.-Form Class) - 2.766340.
Average deviation of individual tree volumes from values estimated by the equation: ±7.5 percent.
Aggregate difference: estimated values 0.26 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 16.-WHITE ASH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	21	36	48	60	72	82								
11	26	44	61	75	90	103								
12	32	54	74	92	110	126								
13	39	66	89	111	132	152								
14	46	78	106	132	157	181	203							
15	54	92	125	156	184	212	239							
16	63	106	145	181	214	247	277							
17	72	123	167	208	247	284	320							
18	83	140	191	238	282	324	366	405						
19	94	159	217	270	321	368	415	459						
20	105	180	244	305	361	415	467	518						
21		201	274	341	405	466	524	579						
22		224	306	380	451	519	583	646	706	766				
23			339	422	500	575	647	716	783	849				
24			374	466	553	635	714	792	867	940				
25			411	513	608	700	787	871	953	1033				
26			451	562	667	766	863	955	1045	1132				
27				614	728	838	942	1042	1140	1236				
28				668	792	912	1026	1135	1242	1346				
29				724	859	989	1112	1230	1349	1462				
30				785	931	1069	1205	1334	1459	1581				
31				847	1005	1156	1300	1439	1574	1706				
32				912	1081	1245	1400	1549	1694	1837				
33				980	1161	1337	1503	1663	1824	1977				
34				1052	1247	1432	1614	1786	1954	2118				
35				1125	1334	1535	1726	1910	2089	2265				
36				1202	1426	1637	1841	2042	2234	2421				
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 52 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.59	.61	.63	.65	.67	.69	.71	.73	.75	.78
8	.80	.83	.86	.88	.91	.94	.97	1.00	1.03	1.06
9	1.10	1.13	1.17	1.21	1.24	1.28	1.33	1.37	1.41	1.46

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 181 x 1.17 = 212 bd. ft.
Basic data: 52 trees from Pisgah and Nantahala National Forests and Tucker County, W. Va.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.334759 (logarithm d.b.h. inches) + .764274 (logarithm merch. ht. ft.) + .013624 (O.B.-Form Class) - 2.895813.
Average deviation of individual tree volumes from values estimated by the equation: ±6.3 percent.
Aggregate difference: estimated values 0.24 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 17.-WHITE PINE AND HEMLOCK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 83

DBH	Number of 16.3-foot logs												
	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
In.	Gross volume in board feet													
10	23	37	48	58										
11	28	45	59	72	84									
12	34	54	71	87	101	114								
13	41	66	85	103	120	136	150							
14	48	76	100	121	141	159	177	193						
15	55	89	116	141	164	185	205	224	243					
16	64	102	134	162	188	213	236	258	279	300				
17	73	116	152	185	215	243	269	294	319	342				
18	83	132	173	209	243	275	305	333	361	388				
19	93	148	194	236	274	308	344	376	406	436				
20	104	166	217	264	306	346	384	420	454	488				
21	116	184	242	293	340	385	427	467	502	542	578			
22	128	204	268	324	377	426	472	516	560	600	640			
23	141	224	294	357	415	469	520	569	617	661	705			
24	154	246	324	392	455	515	572	625	676	726	773	820		
25		269	353	428	498	562	624	682	738	792	845	895		
26		293	385	467	542	612	679	743	805	863	920	977	1030	
27		318	418	507	589	665	738	807	873	938	1000	1059	1119	
28		344	453	548	637	721	800	875	946	1016	1081	1148	1211	1274
29		372	489	592	689	778	863	944	1007	1096	1169	1239	1306	1374
30		400	526	637	741	838	929	1016	1099	1180	1259	1334	1406	1479
31		430	565	686	796	900	998	1091	1180	1268	1352	1432	1510	1589
32		460	605	734	851	964	1069	1169	1265	1358	1445	1535	1618	1702
33		492	647	785	912	1030	1143	1250	1352	1452	1549	1641	1730	1820
34			690	838	973	1099	1219	1334	1442	1549	1652	1750	1849	1941
35			736	891	1038	1172	1300	1422	1538	1652	1762	1866	1968	2070
36			782	948	1102	1245	1380	1510	1637	1754	1871	1982	2094	2198
37			815	1007	1169	1321	1466	1603	1734	1862	1986	2104	2223	2333
38				1067	1239	1400	1556	1698	1841	1977	2104	2234	2355	2477
39				1130	1312	1483	1644	1799	1945	2089	2228	2360	2495	2618
40				1194	1387	1567	1738	1901	2056	2208	2355	2495	2630	2767
41				1259	1462	1652	1832	2004	2168	2328	2483	2630	2780	2917
42				1327	1542	1742	1932	2113	2286	2455	2618	2773	2924	3076
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 322 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes:

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.72	.74	.76	.78	.80	.82	.84	.86	.88	.90
8	.93	.95	.98	1.00	1.02	1.05	1.08	1.10	1.13	1.16
9	1.19	1.22	1.25	1.28	1.32	1.35	1.38	1.42	1.46	1.49

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 162 x 1.25 = 203 bd. ft.
Basic data: 322 trees from Cherokee, Pisgah and Nantahala National Forests; and Bland County, Virginia.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.178540 (logarithm d.b.h. inches) + .671470 (logarithm merch. ht. ft.) + .010895 (O.B.-Form Class) - 2.333807.
Average deviation of individual tree volumes from values estimated by the equation: White pine ±6.2 percent; Hemlock ±6.9 percent.
Aggregate difference: estimated values - White pine 0.60 percent low; Hemlock 1.64 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 18.-LOBLOLLY PINE AND YELLOWPOPLAR

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 87

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	22	36	47	58	68	77	86	94						
11	28	45	59	72	85	96	107	117						
12	34	55	72	89	104	118	131	144	156					
13	41	66	88	107	125	142	158	173	188	20				
14	48	78	104	127	148	169	188	206	223	240	25,			
15	57	92	122	149	175	198	220	242	262	282	302	321		
16	66	107	142	173	203	230	256	281	306	329	352	373		
17	76	123	164	200	233	266	295	324	352	378	405	430		
18		141	187	229	267	303	337	371	402	432	462	491		
19		160	212	259	303	344	383	421	456	491	525	557		
20		180	239	292	341	387	432	474	514	553	592	628		
21		202	268	327	382	434	484	531	577	621	662	705		
22		225	299	365	427	484	540	592	643	692	740	785		
23			332	406	473	537	598	656	713	767	820	871		
24			366	448	522	594	661	726	787	847	906	962		
25			403	492	575	653	728	798	867	933	995	1059		
26			442	540	631	716	798	875	951	1023	1091	1161		
27			483	589	689	782	871	955	1038	1117	1194	1268		
28			525	641	750	851	948	1040	1130	1216	1300	1380		
29			570	697	813	925	1028	1130	1225	1318	1409	1496		
30			617	753	881	1000	1114	1222	1327	1429	1524	1622		
31			667	815	951	1079	1202	1318	1432	1542	1648	1750		
32				877	1023	1161	1294	1419	1542	1660	1774	1884		
33				942	1102	1250	1390	1528	1656	1782	1905	2023		
34				1009	1180	1340	1493	1637	1778	1914	2042	2173		
35				1081	1262	1432	1596	1754	1901	2046	2188	2323		
36				1153	1349	1531	1706	1871	2032	2188	2333	2483		
37				1230	1439	1633	1820	1995	2168	2333	2489	2649		
38				1309	1531	1738	1936	2123	2307	2483	2649	2818		
39					1626	1845	2056	2259	2449	2636	2818	2992		
40					1726	1959	2183	2393	2600	2799	2992	3177		
41					1828	2075	2312	2535	2754	2965	3162	3365		
42					1932	2193	2443	2679	2911	3133	3350	3556		
43						2317	2582	2831	3076	3311	3540	3758		
44						2449	2729	2992	3251	3491	3733	3963		
45						2582	2871	3155	3420	3681	3936	4178		
46						2716	3027	3319	3606	3873	4140	4406		
47							3177	3491	3784	4074	4355	4624		
48							3342	3664	3981	4285	4571	4864		

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Table above is for the average O.B.-Form Class of the 712 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.56	.58	.59	.61
7	.62	.64	.66	.68	.70	.72	.74	.76	.78	.80
8	.82	.85	.87	.90	.92	.95	.97	1.00	1.03	1.05
9	1.08	1.11	1.15	1.18	1.21	1.24	1.28	1.32	1.35	1.39

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 173 x 1.15 = 194 bd. ft.

Basic data: 712 trees - Yellowpoplar from: Geo. Washington, Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio; Tucker County, W. Va.; Bland County, Virginia and Chatham County, N. C. - Loblolly pine from: Piedmont and northern coastal plain counties of South Carolina.

Table constructed from the equation:

Logarithm International 1/4" bd. ft. vol. = 2.336667 (logarithm d.b.h. inches) + .696762 (logarithm merch. ht. ft.) + .011959 (O.B.-Form Class) - 2.668960.

Average deviation of individual tree volumes from values estimated by the equation: Loblolly pine ±5.9 percent; Yellowpoplar ±7.0 percent.

Aggregate difference: estimated values - Loblolly pine 1.03 percent low; Yellowpoplar 2.04 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 19.-SHORTLEAF PINE AND VIRGINIA PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	25	41	56	69	81	93	104	115						
11	31	52	70	86	102	116	130	144	157	169	182			
12	38	64	86	106	125	143	160	176	192	208	223			
13	46	77	103	128	151	172	193	213	232	251	268			
14	55	91	123	152	180	205	230	254	276	298	320			
15	65	108	145	179	211	241	270	298	325	352	377			
16	75	125	169	208	246	280	315	347	378	409	438			
17	87	144	194	240	283	324	363	400	436	471	506			
18	99	165	223	275	324	371	415	458	499	540	578			
19	113	188	253	313	368	421	472	520	568	612	658			
20	127	212	285	352	415	475	532	586	640	692	741			
21		238	320	395	466	532	597	658	718	776	832			
22		265	357	441	520	594	665	734	800	865	929			
23			396	490	577	659	740	815	889	962	1030			
24			438	542	638	729	817	902	982	1062	1138			
25			482	596	702	804	900	993	1081	1169	1253			
26				653	771	881	986	1089	1186	1282	1377			
27				714	841	964	1079	1189	1297	1403	1503			
28				778	916	1050	1175	1297	1413	1528	1637			
29				845	995	1140	1276	1406	1535	1660	1778			
30				916	1079	1233	1380	1524	1663	1795	1928			
31				989	1167	1334	1493	1648	1795	1941	2080			
32				1067	1256	1435	1607	1774	1936	2089	2244			
33				1146	1349	1545	1730	1905	2080	2249	2410			
34				1230	1449	1656	1858	2046	2234	2415	2588			
35				1315	1552	1774	1986	2193	2388	2582	2767			
36				1406	1660	1897	2123	2344	2553	2761	2958			
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 503 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.65	.67	.68	.70	.72	.74	.76	.78	.80	.82
8	.84	.86	.88	.90	.93	.95	.98	1.00	1.03	1.05
9	1.08	1.10	1.13	1.16	1.19	1.22	1.25	1.28	1.32	1.35

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 208 x 1.13 = 235 bd. ft.
Basic data: 503 trees from Cherokee and Nantahala National Forests; and northeastern South Carolina.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.354920 (logarithm d.b.h. inches) + .735318 (logarithm merch. ht. ft.) + .010971 (O.B.-Form Class) - 2.583906.
Average deviation of individual tree volumes from values estimated by the equation: Shortleaf pine ±5.9 percent; Virginia pine ±5.7 percent.
Aggregate difference: estimated values - Shortleaf pine 1.32 percent high; Virginia pine 2.72 percent low.

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TABLE 20.-SUGAR MAPLE, RED MAPLE AND SWEET BIRCH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	21	35	47	58	68									
11	27	44	58	72	84	96								
12	32	53	71	88	103	117	131	144	156	169	181			
13	39	64	85	105	123	140	157	172	188	202	216			
14	46	76	101	124	146	166	185	204	222	239	256			
15	54	88	118	145	170	194	217	238	259	279	299			
16	62	102	136	168	197	224	251	275	300	324	347			
17	71	117	157	192	226	258	287	316	344	371	397			
18	81	133	178	219	257	293	327	360	392	423	452			
19	92	151	201	248	290	331	370	406	443	478	512			
20	103	169	226	278	327	372	415	457	497	536	574			
21	115	189	253	310	365	415	463	510	555	598	641			
22	128	210	280	345	405	461	515	566	617	665	713			
23	141	232	310	382	448	510	570	627	682	736	787			
24	156	256	342	420	493	562	628	690	752	809	867			
25		280	375	460	541	617	689	757	824	887	951			
26		307	410	504	592	673	752	828	900	970	1040			
27		334	447	548	644	733	818	902	982	1057	1132			
28		362	485	596	698	796	889	980	1064	1148	1230			
29		393	525	644	757	863	964	1059	1153	1242	1330			
30		424	566	697	817	931	1040	1143	1245	1343	1439			
31		457	611	750	879	1002	1119	1233	1340	1445	1549			
32		490	656	805	946	1076	1202	1324	1439	1552	1663			
33		526	703	863	1014	1156	1291	1419	1545	1667	1782			
34		562	752	925	1084	1236	1380	1517	1652	1782	1910			
35		601	804	986	1159	1318	1472	1622	1766	1901	2037			
36		640	857	1052	1233	1406	1570	1730	1879	2028	2173			
37		681	912	1119	1312	1496	1671	1841	2000	2158	2312			
38		724	968	1189	1396	1589	1774	1954	2128	2291	2455			
39		767	1026	1262	1479	1687	1884	2070	2254	2432	2606			
40		813	1086	1337	1567	1786	1995	2193	2388	2576	2754			
41		859	1148	1413	1656	1888	2109	2323	2523	2723	2917			
42		908	1213	1489	1750	1995	2228	2449	2667	2871	3076			
43		957	1279	1574	1845	2104	2350	2582	2812	3034	3251			
44					1945	2218	2477	2723	2965	3192	3420			
45					2046	2333	2606	2864	3119	3357	3597			
46					2148	2449	2735	3013	3273	3532	3784			
47					2259	2570	2871	3162	3436	3707	3972			
48					2366	2698	3013	3311	3606	3890	4169			

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 247 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6			.62	.63	.64	.66	.67	.69	.70	.72
7	.73	.75	.77	.78	.80	.82	.84	.86	.88	.90
8	.92	.94	.96	.98	1.00	1.02	1.04	1.07	1.09	1.11
9	1.14	1.17	1.19	1.22	1.24	1.27	1.30	1.33	1.36	1.39

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 168 x 1.19 = 190 bd. ft.
Basic data: 247 trees from Pisgah and Nantahala National Forests; Tucker County, W. Va.; and Bland County, Virginia.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.263548 (logarithm d.b.h. inches) + .716287 (logarithm merch. ht. ft.) + .009572 (O.B.-Form Class) - 2.388677.
Average deviation of individual tree volumes from values estimated by the equation: Sugar maple ±8.3 percent; Red maple ±8.4 percent; Sweet birch ±6.3 percent.
Aggregate difference: estimated values - Sugar maple 5.59 percent high; Red maple 5.51 percent low; Sweet birch 1.31 percent high.

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TABLE 21.-WHITE OAK, CHESTNUT OAK, EASTERN RED OAK, BLACK OAK AND SCARLET OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 85

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	21	34	46	57	67	77								
11	26	43	58	71	84	96	107							
12	32	52	70	87	102	117	131	144						
13	38	63	85	104	123	140	157	173						
14	45	75	100	124	146	167	186	206	224					
15	53	88	118	145	171	195	219	241	262					
16	61	102	137	169	199	226	254	279	305	329				
17	70	117	157	194	228	261	292	321	350	378				
18	81	133	180	221	261	297	333	366	400	432				
19	91	151	203	251	295	337	377	416	453	490				
20	103	170	229	282	332	379	425	468	509	551				
21	115	190	256	316	372	425	474	524	570	617				
22	128	212	285	352	413	472	528	582	635	686				
23	142	234	316	389	458	524	586	646	703	760				
24	156	259	348	430	506	577	646	711	776	838				
25	171	284	383	472	555	634	710	782	853	920				
26	188	311	419	516	608	695	776	857	933	1009				
27	205	340	457	564	665	759	847	935	1019	1099				
28	223	370	497	612	721	824	923	1016	1107	1197				
29		401	538	664	782	893	1000	1102	1199	1297				
30		434	582	718	845	966	1081	1191	1297	1403				
31		468	628	774	912	1042	1167	1285	1400	1514				
32		502	676	834	982	1119	1253	1384	1507	1626				
33		540	726	895	1052	1202	1346	1483	1618	1746				
34		578	778	959	1130	1288	1442	1589	1734	1871				
35		618	832	1026	1208	1377	1542	1698	1854	2000				
36		659	887	1094	1288	1472	1644	1816	1977	2133				
37		703	944	1164	1371	1567	1754	1932	2104	2275				
38			1005	1239	1459	1667	1862	2056	2239	2421				
39			1067	1315	1549	1770	1982	2183	2377	2570				
40			1130	1396	1641	1875	2099	2312	2523	2723				
41				1476	1738	1986	2223	2449	2667	2884				
42				1560	1837	2099	2350	2588	2818	3048				
43				1648	1941	2218	2477	2735	2979	3214				
44				1738	2046	2339	2618	2884	3141	3388				
45				1828	2153	2460	2754	3034	3304	3573				
46				1928	2265	2588	2897	3192	3483	3758				
47				2023	2382	2716	3041	3357	3656	3945				
48				2123	2500	2858	3192	3524	3837	4140				

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Table above is for the average O.B.-Form Class of the 1802 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.44	.45	.46	.47	.48	.50	.51	.52	.53	.54
6	.56	.57	.58	.60	.61	.63	.64	.66	.67	.69
7	.70	.72	.74	.76	.77	.79	.81	.83	.85	.87
8	.89	.91	.93	.95	.98	1.00	1.02	1.05	1.07	1.10
9	1.12	1.15	1.18	1.20	1.23	1.26	1.29	1.32	1.35	1.38

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 169 x 1.18 = 199 bd. ft.

Basic data: 1802 trees from Cherokee, Pisgah, Nantahala and Chattahoochee National Forests; Jackson County, Ohio; Garrett County, Maryland; Hardy and Tucker Counties, W. Va.; Bland County, Virginia; and Chatham County, North Carolina.

Table constructed from the equation:

Logarithm International 1/4" bd. ft. vol. = 2.305965 (logarithm d.b.h. inches) + .729780 (logarithm merch. ht. ft.) +.010116 (O.B.-Form Class) - 2.514001.

Average deviation of individual tree volumes from values estimated by the equation: White oak ±7.9 percent; Chestnut oak ±6.8 percent; Eastern red oak ±6.6 percent; Black oak ±6.3 percent; and Scarlet oak ±6.5 percent.

Aggregate difference: estimated value - White oak 4.51 percent low; Chestnut oak 3.97 percent high; Eastern red oak 2.02 percent high; Black oak 1.90 percent high; and Scarlet oak 4.33 percent low.

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TABLE 22.-WHITE ASH AND BASSWOOD

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET INTERNATIONAL 1/4" LOG RULE

O.B.-FORM CLASS 87

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	21	35	48	59	70	79								
11	27	44	60	74	87	100								
12	33	55	74	91	107	123	138	152						
13	40	66	89	110	130	149	167	184						
14	47	79	107	132	156	178	200	220	240	259				
15	56	93	126	156	184	210	236	259	283	306				
16	65	109	147	182	214	245	275	303	330	357				
17	76	126	170	210	248	283	318	350	382	413				
18	87	144	195	241	284	325	365	402	438	474	508			
19	99	164	222	274	324	370	415	458	499	540	579			
20	112	186	251	310	366	419	469	518	565	610	655			
21		209	282	348	411	470	527	582	634	686	736			
22		234	316	390	459	526	589	650	710	767	822			
23		260	351	434	512	585	656	723	789	853	914			
24		288	388	481	566	647	726	802	873	944	1014			
25		318	428	530	625	714	800	883	964	1042	1117			
26		349	471	582	686	785	879	970	1059	1146	1227			
27		382	515	637	752	859	964	1062	1159	1253	1343			
28		417	562	695	820	938	1052	1159	1265	1368	1466			
29			611	757	891	1019	1143	1262	1374	1486	1596			
30			664	820	968	1107	1239	1368	1493	1614	1730			
31			718	887	1047	1197	1343	1479	1614	1746	1871			
32			774	957	1127	1291	1445	1596	1742	1884	2018			
33			834	1030	1216	1390	1556	1718	1875	2028	2173			
34				1107	1306	1493	1675	1845	2014	2178	2333			
35				1186	1400	1600	1795	1982	2158	2333	2506			
36				1271	1496	1714	1919	2118	2312	2495	2679			
37				1355	1600	1828	2051	2259	2466	2667	2858			
38				1445	1706	1950	2188	2410	2630	2844	3048			
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 192 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6							.54	.56	.58	.60
7	.61	.63	.65	.67	.69	.71	.73	.75	.77	.79
8	.82	.84	.86	.89	.92	.94	.97	1.00	1.03	1.06
9	1.09	1.12	1.15	1.19	1.22	1.26	1.29	1.33	1.37	1.41

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 182 x 1.15 = 209 bd. ft.
Basic data: 192 trees from Pisgah and Nantahala National Forests and Tucker County, W. Va.
Table constructed from the equation:
Logarithm International 1/4" bd. ft. vol. = 2.397562 (logarithm d.b.h. inches) + .737772 (logarithm merch. ht. ft.) + .012495 (O.B.-Form Class) - 2.831076.
Average deviation of individual tree volumes from values estimated by the equation: White ash ±6.4 percent; Basswood ±8.1 percent.
Aggregate difference: estimated values - White ash 1.32 percent high; Basswood 1.83 percent low.

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TABLE 23.-EASTERN WHITE PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 82

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5										
11	2	4	5	6	7									
12	3	5	6	8	9	10								
13	4	6	8	9	11	12	13							
14	4	7	9	11	13	14	16	17						
15	5	8	10	13	15	17	18	20	22					
16	6	9	12	15	17	19	21	23	25	27				
17	7	10	14	17	19	22	24	27	29	31				
18	7	12	16	19	22	25	28	30	33	35				
19	8	13	18	21	25	28	31	34	37	40				
20	9	15	20	24	28	31	35	38	41	44				
21	11	17	22	27	31	35	39	42	46	49	53			
22	12	18	24	30	34	39	43	47	51	55	58			
23	13	20	27	32	38	43	47	52	56	60	64			
24		22	30	36	42	47	52	57	62	66	71	75		
25		25	32	39	46	51	57	62	67	72	77	82		
26		27	35	43	50	56	62	68	74	79	84	89	94	
27			38	46	54	61	68	74	80	86	92	97	102	
28			42	50	58	66	73	80	87	93	99	105	111	117
29			45	54	63	71	79	86	94	100	107	114	120	126
30				59	68	77	85	93	101	108	116	122	129	136
31				63	73	83	92	100	109	116	124	132	139	146
32				68	78	89	98	107	116	125	133	141	149	156
33					84	95	105	115	124	134	143	151	160	168
34					90	101	112	123	133	143	152	161	170	179
35						108	120	131	142	152	162	172	182	191
36						115	128	140	151	162	173	183	193	203
37							136	148	160	172	183	194	205	216
38							144	157	170	182	194	206	218	229
39										193	206	218	231	242
40										204	218	231	244	256
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 210 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.73	.74	.76	.78	.81	.83	.85	.88	.90	.92
8	.95	.97	1.00	1.03	1.05	1.08	1.11	1.14	1.17	1.20
9	1.24	1.27	1.30	1.34	1.37					

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.30 = 20.
Basic data: 210 trees from Cherokee, Pisgah and Nantahala National Forests.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.205930 (logarithm d.b.h. inches) + .670361 (logarithm merch. ht. ft.) + .011578 (O.B.-Form Class) - 2.454191.
Average deviation of individual tree volumes from values estimated by the equation: ±6.1 percent.
Aggregate difference: estimated values 0.80 percent low.

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TABLE 24.-LOBLOLLY PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 86

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	4	5	6								
11	2	3	4	5	6	7	8	9						
12	3	4	6	7	8	9	10	11	12					
13	3	5	7	8	10	11	12	13	14	16				
14	4	6	8	10	12	14	15	16	18	19	20			
15	5	8	10	12	14	16	18	20	21	23	24	26		
16	6	9	12	15	17	19	21	23	25	27	29	30		
17	7	11	14	17	20	22	25	27	30	32	34	36		
18		13	16	20	23	26	29	32	34	37	39	42		
19		15	19	23	27	30	34	37	40	43	46	48		
20		17	22	26	31	35	38	42	46	49	52	55		
21			25	30	35	40	44	48	52	56	59	63		
22			28	34	40	45	50	54	59	63	67	71		
23			32	38	45	50	56	61	66	71	76	80		
24			36	43	50	56	62	68	74	79	84	90		
25			40	48	56	63	70	76	82	88	94	100		
26				53	62	70	77	84	91	98	105	111		
27				59	68	77	86	94	101	108	116	122		
28				65	75	85	94	103	111	119	127	135		
29					83	93	103	113	122	131	140	148		
30					90	102	113	124	134	144	153	162		
31					99	111	123	135	146	157	167	177		
32						121	134	147	159	170	182	192		
33						132	146	159	172	185	197	209		
34						142	158	173	187	200	213	226		
35						154	170	186	201	216	231	244		
36						166	184	200	217	233	248	263		
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 378 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.62	.64	.66	.68	.70	.72	.74	.76	.78	.81
8	.83	.86	.88	.91	.94	.97	1.00	1.03	1.06	1.09
9	1.13	1.16	1.20	1.23	1.27	1.31	1.35	1.39	1.44	1.48

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.20 = 18.
Basic data: 378 trees from Piedmont and northern coastal plain counties of South Carolina.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.656781 (logarithm d.b.h. inches) + .668339 (logarithm merch. ht. ft.) + .013130 (O.B.-Form Class) - 3.174013.
Average deviation of individual tree volumes from values estimated by the equation: ±6.3 percent.
Aggregate difference: estimated values 0.40 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 25.-VIRGINIA PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	4	5	6	7	8	9	9						
11	3	4	6	7	8	10	11	12	13	14	15			
12	3	6	7	9	11	12	13	15	16	17	18			
13	4	7	9	11	13	15	16	18	19	21	22			
14	5	8	11	13	15	18	20	22	23	25	27			
15	6	10	13	16	18	21	23	26	28	30	32			
16	7	11	15	18	21	24	27	30	32	35	37			
17	8	13	17	21	25	28	32	35	38	41	43			
18	9	15	20	24	29	32	36	40	43	47	50			
19	10	17	23	28	33	37	41	46	49	53	57			
20	12	19	26	32	37	42	47	52	56	60	65			
21		22	29	36	42	48	53	58	63	68	73			
22		25	33	40	47	53	59	65	71	76	82			
23			36	45	52	59	66	73	79	85	91			
24				50	58	66	73	81	88	95	101			
25							81	89	97	104	112			
26								98	107	115	123			
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 179 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.69	.71	.73	.75	.77	.79	.81	.83	.85	.88
8	.90	.92	.95	.97	1.00	1.03	1.05	1.08	1.11	1.14
9	1.17	1.20	1.23	1.26	1.30	1.33	1.37	1.40	1.44	1.48

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 18 x 1.23 = 22.
Basic data: 179 trees from Cherokee and Nantahala National Forests.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.457404 (logarithm d.b.h. inches) + .704882 (logarithm merch. ht. ft.) + .011371 (O.B.-Form Class) - 2.718291.
Average deviation of individual tree volumes from values estimated by the equation: ±5.0 percent.
Aggregate difference: estimated values 0.11 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 26.-SHORTLEAF PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 89

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	4	5	6	7	8	9							
11	3	5	6	7	9	10	11	12						
12	4	6	8	9	11	12	14	15						
13	4	7	9	12	13	15	17	19						
14	5	9	11	14	16	18	21	23	25					
15	6	10	14	17	20	22	25	27	29					
16	8	12	16	20	23	26	29	32	35	38	40			
17	9	14	19	23	27	31	34	38	41	44	47			
18	10	16	22	27	31	36	40	44	47	51	55			
19	12	19	25	31	36	41	46	50	55	59	63			
20		22	29	35	41	47	52	57	62	67	72			
21		25	33	40	47	53	59	65	71	76	82			
22		28	37	45	53	60	67	74	80	86	92			
23			42	51	59	67	75	83	90	97	103			
24			46	57	66	76	84	92	100	108	115			
25			52	63	74	84	94	103	111	120	128			
26				70	82	93	104	114	124	133	142			
27				77	90	103	114	125	136	147	157			
28				85	99	113	126	138	150	161	173			
29				93	109	124	138	151	164	177	189			
30				101	119	135	150	165	180	193	206			
31				111	129	147	164	180	195	210	225			
32				120	140	160	178	195	212	229	244			
33				130	152	173	193	212	230	248	265			
34				141	164	187	208	229	248	267	286			
35				152	177	202	225	247	268	288	308			
36				163	191	217	242	266	288	310	332			
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Block indicates extent of basic data for all O.B.-Form Classes.

Table above is for the average O.B.-Form Class of the 324 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classe.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units)									
	0	1	2	3	4	5	6	7	8	9
	Factors									
5					.66	.68	.70	.72	.74	.76
6	.78	.80	.82	.85	.87	.90	.92	.95	.97	1.00
7	1.03	1.06	1.08	1.11	1.15	1.18	1.21	1.24	1.28	1.32
8										
9										

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 20 x 1.08 = 22.

Basic data: 324 trees from Cherokee and Nantahala National Forests; and northeastern South Carolina.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.605507 (logarithm d.b.h. inches) + .701402 (logarithm merch. ht. ft.) + .011980 (O.B.-Form Class) - 2.969663.

Average deviation of individual tree volumes from values estimated by the equation: ±6.6 percent.

Aggregate difference: estimated values 0.23 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 27.--EASTERN HEMLOCK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 85

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5										
11	3	4	5	6	7									
12	3	5	6	8	9	10								
13	4	6	8	9	11	12								
14	5	7	9	11	13	14	16							
15	5	8	11	13	15	17	19							
16	6	10	13	15	18	20	22	24						
17	7	11	15	18	20	23	25	28	30					
18	8	13	17	20	23	26	29	31	34	36				
19	9	15	19	23	26	30	33	36	38	41				
20	11	17	21	26	30	34	37	40	43	46				
21	12	18	24	29	33	38	41	45	49	52				
22	13	21	27	32	37	42	46	50	54	58	62			
23	15	23	30	36	41	46	51	56	60	64	68			
24	16	25	33	40	46	51	57	62	66	71	76			
25		28	36	44	50	56	62	68	73	78	83			
26		31	40	48	55	62	68	74	80	86	91			
27		34	43	52	60	68	75	81	88	94	100			
28		36	47	57	65	74	81	88	96	102	108	115		
29		40	51	62	71	80	88	96	104	111	118	124		
30		43	55	67	77	86	96	104	112	120	127	135		
31		46	60	72	83	93	103	112	121	129	138	146		
32		50	64	78	90	100	111	121	130	139	148	157	165	
33		54	69	83	96	108	119	130	140	150	159	168	177	
34		57	74	90	103	116	128	139	150	161	171	181	190	
35			80	96	110	124	137	149	161	172	183	193	203	
36			85	102	118	132	146	159	172	184	195	206	217	
37			91	109	126	141	156	170	183	196	208	220	232	
38				116	134	150	166	181	195	208	222	234	247	
39				123	142	160	176	192	207	221	236	249	262	
40				131	151	169	187	204	220	235	250	264	278	
41				139	160	180	198	216	233	249	265	280	294	
42				147	169	190	210	229	246	264	280	296	312	
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 112 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes:

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7					.76	.78	.80	.82	.84	.86
8	.88	.90	.93	.95	.98	1.00	1.02	1.05	1.08	1.10
9	1.13	1.16	1.19	1.22	1.25	1.28	1.31	1.34	1.38	1.42

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.19 = 18
Basic data: 112 trees from Cherokee, Pisgah and Nantahala National Forests; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.339470 (logarithm d.b.h. inches) + .639514 (logarithm merch. ht. ft.) + .010737 (O.B.-Form Class) - 2.511685.
Average deviation of individual tree volumes from values estimated by the equation: ±7.1 percent.
Aggregate difference: estimated values 0.15 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 28.-SWEET BIRCH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs											
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5										
11	2	4	5	6										
12	3	4	6	8										
13	3	5	8	9	11									
14	4	6	9	11	13									
15	4	8	10	13	16									
16	5	9	12	15	18	21								
17	6	10	14	18	21	24								
18	7	12	16	20	24	28	31	35						
19	8	13	18	23	27	31	35	39						
20	9	15	21	26	31	35	40	44						
21	10	17	23	29	35	40	45	50						
22	11	19	26	32	39	44	50	55						
23	12	21	29	36	43	49	56	62						
24	14	23	32	40	47	55	62	68						
25		26	35	44	52	60	68	75						
26		28	39	48	57	66	74	82						
27		31	42	53	63	72	81	90						
28		34	46	58	68	79	89	98						
29		37	50	62	74	85	96	107						
30		40	54	68	80	92	104	116						
31		43	59	73	87	100	113	125						
32		46	63	79	94	108	121	135						
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 54 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6			.64	.66	.67	.68	.70	.71	.72	.74
7	.76	.77	.78	.80	.82	.83	.85	.87	.88	.90
8	.92	.94	.96	.98	1.00	1.02	1.04	1.06	1.08	1.10
9	1.13	1.15	1.17	1.20	1.22	1.24	1.27	1.30	1.32	1.35

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.17 = 18.
Basic data: 54 trees from Pisgah and Nantahala National Forests; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.361890 (logarithm d.b.h. inches) + .772073 (logarithm merch. ht. ft.) + .008695 (O.B.-Form Class) - 2.557288.
Average deviation of individual tree volumes from values estimated by the equation: ±6.3 percent.
Aggregate difference: estimated values 0.22 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 29.-EASTERN RED OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 85

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6	7								
11	2	4	5	6	7	8								
12	3	5	6	8	9	10								
13	3	6	8	9	11	13	14							
14	4	7	9	11	13	15	17							
15	5	8	11	13	15	18	20	22						
16	6	9	12	15	18	20	23	25						
17	6	11	14	18	21	24	26	29						
18	7	12	16	20	24	27	30	33	36					
19	8	14	19	23	27	31	34	38	41					
20	10	16	21	26	30	35	39	43	47					
21		18	24	29	34	39	44	48	52	56				
22		20	26	32	38	43	49	54	58	63				
23		22	29	36	42	48	54	59	65	70				
24		24	32	40	47	54	60	66	72	77				
25		27	36	44	52	59	66	72	79	85				
26		29	39	48	56	65	72	79	86	94				
27		32	43	53	62	70	79	87	95	102				
28		35	47	57	67	77	86	95	103	111				
29		38	51	62	73	84	93	103	112	121				
30		41	54	67	79	90	101	111	121	131				
31		44	59	73	86	98	109	120	131	142				
32		48	64	78	92	105	118	130	141	152				
33		51	69	84	99	113	126	139	152	164				
34		55	74	91	106	122	136	150	163	176				
35		59	79	97	114	130	146	160	175	188				
36		63	84	104	122	139	156	171	187	201				
37			90	111	130	148	166	183	199	215				
38			96	118	138	158	177	194	212	229				
39			102	125	147	168	188	207	225	243				
40			108	133	156	178	200	220	239	258				
41				141	166	189	211	233	254	274				
42				149	175	200	223	246	268	290				
43				158	185	211	237	261	284	306				
44				166	195	223	250	275	299	324				
45				175	206	236	263	290	316	340				
46				185	217	248	277	306	333	359				
47				194	229	261	292	321	350	378				
48				204	240	274	306	337	367	396				

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 280 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5							.63	.65	.66	.68
6							.80	.82	.84	.86
7	.70	.71	.73	.75	.77	.79	1.02	1.05	1.07	1.10
8	.89	.91	.93	.95	.98	1.00	1.30	1.33	1.36	1.40
9	1.12	1.15	1.18	1.21	1.24	1.27				

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.18 = 18.
Basic data: 280 trees from Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio; Garrett County, Md.; Tucker County, W. Va.; and Bland County, Va.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.358786 (logarithm d.b.h. inches) + .724375 (logarithm merch. ht. ft.) + .010388 (O.B.-Form Class) - 2.634671.
Average deviation of individual tree volumes from values estimated by the equation: ±7.3 percent.
Aggregate difference: estimated values 0.23 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 30.-SCARLET OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 87

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	6	6	8								
11	2	4	6	7	8	9	11							
12	3	5	7	8	10	12	13	14						
13	4	6	8	10	12	14	16	17						
14	4	7	10	12	15	17	19	21	23					
15	5	9	12	14	17	20	22	24	27					
16	6	10	14	17	20	23	26	29	31	34				
17	7	12	16	20	23	27	30	33	36	39				
18	8	13	18	22	27	30	34	38	41	45				
19	9	15	20	26	30	35	39	43	47	51				
20	10	17	23	29	34	39	44	49	53	58				
21	11	19	26	32	38	44	49	55	60	65				
22	13	21	29	36	43	49	55	61	67	72				
23	14	24	32	40	48	55	61	68	74	80				
24	16	26	36	45	53	60	68	75	82	89				
25	17	29	40	49	58	67	75	83	91	98				
26		32	43	54	64	73	82	91	100	108				
27		35	48	59	70	80	90	100	109	118				
28		38	52	64	76	88	98	109	119	129				
29		42	56	70	83	95	107	118	129	140				
30		45	61	76	90	103	116	128	140	152				
31		49	66	82	97	111	125	139	151	164				
32		52	71	88	105	120	135	149	163	177				
33			77	95	113	129	146	161	176	190				
34			82	102	121	139	156	173	189	205				
35				110	130	149	168	185	202	219				
36				117	139	159	179	198	216	234				
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter, O.B.-FORM CLASS: Diameter inside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Block indicates extent of basic data for all O.B.-Form Classes.

Table above is for the average O.B.-Form Class of the 213 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.60	.62	.64	.65
7	.67	.68	.70	.72	.73	.75	.77	.79	.81	.83
8	.85	.87	.89	.91	.93	.95	.98	1.00	1.02	1.05
9	1.07	1.10	1.12	1.15	1.18	1.21	1.24	1.27	1.30	1.33

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 17 x 1.12 = 19.

Basic data: 213 trees from Cherokee, Pisgah, Nantahala, and Chattahoochee National Forests; Bland County, Virginia; and Chatham County, North Carolina.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.387291 (logarithm d.b.h. inches) + .755965 (logarithm merch. ht. ft.) + .010347 (O.B.-Form Class) - 2.690299.

Average deviation of individual tree volumes from values estimated by the equation: ±5.5 percent.

Aggregate difference: estimated values 0.26 percent low.

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TABLE 31.-BLACK OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6	7								
11	2	4	5	6	8	9								
12	3	5	6	8	9	11	12							
13	3	6	8	9	11	13	14	16						
14	4	7	9	11	13	15	17	19	21					
15	5	8	11	13	16	18	20	22	24					
16	5	9	12	15	18	21	23	26	28					
17	6	10	14	18	21	24	27	30	32					
18	7	12	16	20	24	27	30	34	37					
19	8	14	18	23	27	31	35	38	42					
20	9	15	21	26	30	35	39	43	47					
21		17	23	29	34	39	44	48	53					
22		19	26	32	38	43	48	54	59					
23		21	28	35	42	48	54	59	65					
24		23	32	39	46	53	59	66	72					
25		26	35	43	51	58	65	72	79					
26		28	38	47	56	64	71	79	86					
27		30	41	51	61	70	78	86	94					
28		33	45	56	66	76	85	94	103					
29		36	49	60	72	82	92	102	111					
30		39	53	66	77	89	100	110	120					
31		42	57	71	84	96	107	119	130					
32		45	61	76	90	103	116	128	140					
33		48	66	82	97	111	124	137	150					
34		52	70	88	104	119	133	147	161					
35		56	76	94	111	127	143	157	172					
36		59	80	100	118	135	152	168	184					
37		63	86	106	126	144	162	179	195					
38			91	113	134	154	172	190	208					
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 150 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5									.67	.69
6									.86	.88
7	.70	.72	.74	.76	.78	.80	.82	.84	.90	.93
8	.90	.93	.95	.98	1.00	1.02	1.05	1.08	1.10	1.13
9	1.16	1.19	1.22	1.25	1.28	1.32	1.35	1.38	1.42	1.45

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.22 = 18.
Basic data: 150 trees from Cherokee, Nantahala, and Chattahoochee National Forests; Jackson County, Ohio; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.316801 (logarithm d.b.h. inches) + .749715 (logarithm merch. ht. ft.) + .010858 (O.B.-Form Class) - 2.652733.
Average deviation of individual tree volumes from values estimated by the equation: ±5.6 percent.
Aggregate difference: estimated values 0.20 percent low.

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TABLE 32.-WHITE OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs											
In.	2	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6									
11	2	4	5	6	7	8								
12	3	5	6	8	9	10								
13	4	6	8	10	11	13	14							
14	4	7	9	11	13	15	17							
15	5	8	11	13	16	18	20							
16	6	10	13	16	18	21	23	25						
17	7	11	15	18	21	24	27	29						
18	8	13	17	21	24	28	31	34	36					
19	9	15	19	24	28	31	35	38	42					
20	10	17	22	27	31	36	40	43	47	51				
21	12	19	25	30	35	40	44	49	53	57				
22	13	21	28	34	39	45	50	55	59	64				
23	14	23	31	38	44	50	56	61	66	71				
24	16	26	34	42	49	55	61	67	73	79				
25		28	38	46	54	61	68	74	81	87				
26		31	42	51	59	67	75	82	89	96				
27		34	45	56	65	73	82	90	97	104				
28		37	50	60	71	80	89	98	106	114				
29		41	54	66	77	87	97	106	116	124				
30		44	59	71	83	95	105	116	125	135				
31		48	63	77	90	103	114	125	136	146				
32		52	68	84	98	111	123	135	147	158				
33		56	74	90	105	119	133	146	158	170				
34		60	79	97	113	128	143	156	170	182				
35		64	85	104	121	137	153	168	182	196				
36		69	91	111	130	147	164	180	194	209				
37			97	119	138	157	175	192	208	224				
38			104	126	148	168	187	205	222	239				
39			110	135	157	179	199	218	237	254				
40			118	143	167	190	211	232	251	270				
41				152	177	201	224	246	267	287				
42				161	188	213	238	261	282	304				
43				171	199	226	252	276	299	322				
44				180	210	239	266	292	316	340				
45				190	222	252	280	308	334	359				
46				201	234	266	296	324	352	379				
47				211	247	280	312	342	371	399				
48				222	259	294	328	360	390	420				

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100. Block indicates extent of basic data for all O.B.-Form Classes. Table above is for the average O.B.-Form Class of the 688 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.45	.46	.47	.48	.49	.50	.52	.53	.54	.56
6	.57	.58	.60	.61	.62	.64	.65	.67	.69	.70
7	.72	.74	.75	.77	.79	.81	.83	.85	.87	.89
8	.91	.93	.95	.98	1.00	1.02	1.05	1.07	1.10	1.12
9	1.15	1.18	1.20	1.23	1.26	1.29	1.32	1.36	1.39	1.42

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 16 x 1.20 = 19.

Basic data: 688 trees from Cherokee, Pisgah, Nantahala, and Chattahoochee National Forests; Jackson County, Ohio; Garrett County, Md.; Hardy County, W. Va.; Bland County, Va.; and Chatham County, N. C.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.416195 (logarithm d.b.h. inches) + .692581 (logarithm merch. ht. ft.) + .010189 (O.B.-Form Class) - 2.618716.

Average deviation of individual tree volumes from values estimated by the equation: ±7.0 percent.

Aggregate difference: estimated values 0.08 percent high.

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J. H. Buell
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TABLE 33.-CHESTNUT OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 86

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4											
11	2	4	5	6	7	8								
12	3	5	6	7	9	10								
13	3	6	7	9	10	12								
14	4	7	9	11	13	14								
15	5	8	10	13	15	17	19							
16	6	9	12	15	17	20	22							
17	7	11	14	17	20	23	25							
18	8	12	16	20	23	26	29							
19	9	14	18	23	26	30	33	37						
20	10	16	21	26	30	34	38	42						
21	11	18	24	29	34	38	43	47						
22	12	20	26	32	38	43	48	52						
23	14	22	29	36	42	48	53	58	64					
24	15	25	33	40	47	53	59	65	70					
25	17	27	36	44	52	59	65	72	78					
26	18	30	40	49	57	65	72	79	86	92				
27	20	33	44	53	62	71	79	86	94	101				
28	22	36	48	58	68	77	86	95	103	110				
29		39	52	63	74	84	94	103	112	120				
		42	56	69	81	91	102	112	121	131				
30		46	61	75	87	99	110	121	132	142				
31		50	66	81	94	107	119	131	142	153				
32		54	71	87	102	115	128	141	153	165				
33		58	77	94	109	124	138	152	165	177				
34		62	82	100	117	133	149	163	177	190				
35		66	88	107	126	143	159	175	190	204				
36			94	115	134	153	170	187	203	218				
37			100	123	144	163	182	199	216	233				
38			109	131	153	173	193	213	231	248				
39							206	226	246	264				
			114	139	163	184	218	240	261	280				
40			121	148	173	196	232	254	276	297				
41			128	157	183	208	246	269	292	315				
42				166	194	220	259	285	310	333				
43				175	205	233								
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Block indicates extent of basic data for all O.B.-Form Classes.

Table above is for the average O.B.-Form Class of the 471 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.48	.49	.50	.51	.52	.53	.54	.56	.57	.58
6	.59	.60	.62	.63	.64	.65	.67	.68	.70	.71
7	.72	.74	.75	.77	.78	.80	.82	.83	.85	.87
8	.88	.90	.92	.94	.96	.98	1.00	1.02	1.04	1.06
9	1.08	1.10	1.13	1.15	1.18	1.20	1.22	1.25	1.27	1.30

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.13 = 17.

Basic data: 471 trees from Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio; and Bland County, Virginia.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.440861 (logarithm d.b.h. inches) + .699519 (logarithm merch. ht. ft.) + .008751 (O.B.-Form Class) - 2.578469.

Average deviation of individual tree volumes from values estimated by the equation: ±6.7 percent.

Aggregate difference: estimated values 0.47 percent low.

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TABLE 34.-YELLOWPOPLAR

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 88

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6	7	8	8						
11	3	4	6	7	8	9	10	10						
12	3	5	7	8	10	11	12	13						
13	4	6	8	10	12	13	14	16						
14	5	8	10	12	14	15	17	19	20					
15	6	9	12	14	16	18	20	22	24					
16	6	10	14	16	19	21	24	26	28					
17	8	12	16	19	22	25	27	30	32					
18		14	18	22	25	28	31	34	37					
19		16	20	25	28	32	36	39	42	45				
20		18	23	28	32	36	40	44	47	51				
21		20	26	31	36	41	45	49	53	57				
22		22	29	35	40	46	50	55	60	64				
23			32	39	45	51	56	61	66	71	76			
24			35	43	50	56	62	68	73	79	84			
25			39	47	55	62	69	75	81	87	92			
26			43	52	60	68	75	82	89	95	101			
27			47	57	66	74	82	90	97	104	111			
28			51	62	72	81	90	98	106	114	121			
29			56	68	78	88	98	107	115	124	132			
30			61	73	85	96	106	116	125	134	143			
31			66	79	92	104	115	125	135	145	154			
32				86	99	112	124	135	146	156	167			
33				92	107	120	133	145	157	168	180			
34				99	115	129	143	156	169	181	193			
35				106	123	138	153	168	181	194	206			
36				113	131	148	164	179	193	208	221			
37				121	140	158	175	191	206	221	236			
38				129	150	169	187	204	220	236	251			
39					159	180	199	217	234	251	268			
40					169	190	211	230	249	267	284			
41					179	202	224	244	264	283	301			
42					190	214	237	259	280	300	319			
43						226	251	274	296	318	338			
44						239	265	290	313	335	357			
45						252	280	306	330	354	377			
46						266	295	322	348	373	397			
47							310	339	366	393	418			
48							327	356	386	413	440			

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Block indicates extent of basic data for all O.B.-Form Classes.

Table above is for the average O.B.-Form Class of the 334 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7										
8	.59	.61	.63	.65	.67	.69	.53	.54	.56	.58
9	.79	.82	.84	.86	.89	.92	.71	.73	.75	.77
	1.06	1.09	1.12	1.15	1.19	1.22	1.26	.97	1.00	1.03
								1.29	1.33	1.37

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 16 x 1.12 = 18.

Basic data: 334 trees from Geo. Washington, Cherokee, Pisgah, and Nantahala National Forests; Jackson County, Ohio; Tucker County, W. Va.; Bland County, Va.; and Chatham County, N. C.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.393125 (logarithm d.b.h. inches) + .659267 (logarithm merch. ht. ft.) + .012514 (O.B.-Form Class) - 2.768833.

Average deviation of individual tree volumes from values estimated by the equation: ±6.9 percent.

Aggregate difference: estimated values 0.59 percent low.

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TABLE 35.-SUGAR MAPLE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6									
11	2	4	5	6	7	8								
12	3	5	6	8	9	10	11	12	13	14	15			
13	4	6	8	9	11	12	13	15	16	17	18			
14	4	7	9	11	13	14	16	17	19	20	22			
15	5	8	10	13	15	17	19	20	22	24	25			
16	6	9	12	15	17	20	22	24	26	28	29			
17	7	11	14	17	20	22	25	27	30	32	34			
18	8	12	16	20	23	26	28	31	34	36	39			
19	9	14	18	22	26	29	32	35	38	41	44			
20	10	16	20	25	29	33	36	40	43	46	49			
21		17	23	28	32	37	41	44	48	52	55			
22		19	26	31	36	41	45	50	54	58	62			
23		22	28	34	40	45	50	55	60	64	68			
24		24	31	38	44	50	56	61	66	71	76			
25		26	34	42	48	55	61	67	72	78	83			
26		29	38	46	53	60	67	73	79	85	91			
27		31	41	50	58	66	73	80	86	93	99			
28		34	45	54	63	72	79	87	94	101	108			
29		37	48	59	68	78	86	94	102	110	117			
30		40	52	64	74	84	93	102	111	119	127			
31		43	57	69	80	90	101	110	119	128	137			
32		46	61	74	86	98	108	119	128	138	147			
33		50	65	80	93	105	116	127	138	148	158			
34		53	70	85	99	112	125	136	148	159	169			
35		57	75	91	106	120	133	146	158	170	181			
36		61	80	98	114	128	143	156	169	182	194			
37		65	86	104	121	137	152	166	180	193	206			
38		69	91	111	128	146	161	177	191	206	219			
39		73	97	118	136	154	172	188	203	219	233			
40		78	103	124	145	164	182	199	216	232	247			
41		82	109	132	154	174	193	211	229	246	262			
42		87	115	139	162	184	204	223	242	259	277			
43		92	121	147	171	194	215	236	255	274	292			
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Block indicates extent of basic data for all O.B.-Form Classes.

Table above is for the average O.B.-Form Class of the 105 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5							.63	.64	.66	.68
6					.77	.79	.81	.83	.86	.88
7	.70	.71	.73	.75	1.00	1.03	1.05	1.08	1.11	1.14
8	.90	.92	.95	.98	1.29	1.33	1.36	1.40	1.44	1.48
9	1.17	1.20	1.23	1.26						

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.23 = 18.

Basic data: 105 trees from Pisgah and Nantahala National Forests.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.323953 (logarithm d.b.h. inches) + .677930 (logarithm merch. ht. ft.) + .011266 (O.B.-Form Class) - 2.600019.

Average deviation of individual tree volumes from values estimated by the equation: ±7.7 percent.

Aggregate difference: estimated values 0.09 percent low.

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December 1941

TABLE 36.-RED MAPLE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs											
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5										
11	2	4	5	7	8									
12	3	5	7	8	9	11								
13	4	6	8	10	11	13								
14	4	7	9	12	14	15	17	19						
15	5	8	11	14	16	18	20	22						
16	6	10	13	16	19	21	24	26						
17	7	11	15	18	21	24	27	30						
18	8	13	17	21	25	28	31	34						
19	9	15	20	24	28	32	35	39						
20	10	17	22	27	32	36	40	44						
21		19	25	30	35	40	45	49						
22		21	28	34	40	45	50	55						
23		23	31	38	44	50	56	61						
24		26	34	42	49	55	62	68						
25		28	38	46	54	61	68	75						
26		31	41	51	59	67	75	82						
27		34	45	55	65	73	82	90						
28		37	49	60	70	80	89	98						
29		41	54	66	77	87	97	106						
30		44	58	71	83	94	105	115						
31			63	77	90	102	114	124						
32			68	83	97	110	122	134						
33			73	89	104	118	132	144						
34			79	96	112	127	141	155						
35				103	120	136	151	166						
36				110	128	146	162	178						
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100. Block indicates extent of basic data for all O.B.-Form Classes. Table above is for the average O.B.-Form Class of the 88 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units)									
	0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7										
8	.74	.76	.77	.79	.80	.82	.68	.69	.71	.72
9	.92	.94	.96	.98	1.00	1.02	.84	.86	.88	.90
	1.14	1.16	1.19	1.21	1.24	1.26	1.04	1.06	1.09	1.11
							1.29	1.32	1.35	1.38

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 16 x 1.19 = 19.

Basic data: 88 trees from Pisgah and Nantahala National Forests; Tucker County, W. Va.; and Bland County, Virginia.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.381072 (logarithm d.b.h. inches) + .694671 (logarithm merch. ht. ft.) + .009310 (O.B.-Form Class) - 2.498312.

Average deviation of individual tree volumes from values estimated by the equation: ±6.9 percent.

Aggregate difference: estimated values 0.47 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 37.-BASSWOOD

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6	7								
11	2	4	5	6	8	9								
12	3	5	7	8	9	11	12	13						
13	4	6	8	10	12	13	15	16						
14	4	7	10	12	14	16	18	20	21	23				
15	5	9	12	14	17	19	21	23	25	27				
16	6	10	14	17	20	22	25	27	30	32				
17	7	12	16	20	23	26	29	32	35	38				
18	9	14	19	23	27	30	34	37	40	43	46			
19	10	16	21	26	30	35	39	42	46	50	53			
20	11	18	24	30	35	39	44	48	53	57	61			
21		21	27	34	39	45	50	55	60	64	69			
22		23	31	38	44	50	56	62	67	72	77			
23		26	35	42	50	56	63	69	75	81	86			
24		29	38	47	55	63	70	77	84	90	96			
25		32	43	52	61	70	78	85	93	100	107			
26		35	47	58	68	77	86	94	103	110	118			
27		39	52	64	74	85	94	104	113	122	130			
28		43	57	70	82	93	104	114	124	133	143			
29			62	76	89	102	113	124	135	146	156			
30			68	83	97	111	123	136	147	159	170			
31			74	90	106	120	134	148	160	173	184			
32			80	98	115	130	146	160	174	187	200			
33			86	106	124	141	157	173	188	202	216			
34				114	134	152	170	187	203	218	233			
35				123	144	164	183	201	218	235	251			
36				132	155	176	196	216	234	252	270			
37				142	166	189	210	231	251	270	290			
38				152	177	202	225	248	269	290	310			
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilised, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 140 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5							.57	.58	.60	.61
6							.74	.76	.78	.80
7	.63	.65	.66	.68	.70	.72	.97	1.00	1.03	1.05
8	.83	.85	.87	.90	.92	.95	1.27	1.31	1.35	1.38
9	1.08	1.11	1.14	1.18	1.21	1.24				

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 17 x 1.14 = 19.

Basic data: 140 trees from Pisgah and Nantahala National Forests.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.542317 (logarithm d.b.h. inches) + .705954 (logarithm merch. ht. ft.) + .011750 (O.B.-Form Class) - 2.925896.
Average deviation of individual tree volumes from values estimated by the equation: ±7.7 percent.
Aggregate difference: estimated values 0.01 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 38.-WHITE ASH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6	7								
11	2	4	5	7	8	9								
12	3	5	7	8	10	11								
13	4	6	8	10	12	14								
14	4	7	10	12	14	16	18							
15	5	8	12	14	17	19	22							
16	6	10	13	17	20	23	26							
17	7	11	16	19	23	26	30							
18	8	13	18	22	26	30	34	38						
19	9	15	20	25	30	34	39	43						
20	10	17	23	29	34	39	44	48						
21		19	26	32	38	44	49	54						
22		21	29	36	43	49	55	61	66	72				
23			32	40	47	54	61	68	74	80				
24			36	44	52	60	68	75	82	88				
25			39	49	58	66	75	83	90	98				
26			43	54	64	73	82	91	99	107				
27				59	70	80	90	99	109	118				
28				64	76	87	98	108	119	128				
29				70	83	95	107	118	129	140				
30				76	90	103	116	128	140	151				
31				82	97	112	125	139	151	164				
32				89	105	120	135	150	163	177				
33				96	113	130	146	161	176	190				
34				103	121	139	157	173	189	205				
35				110	130	149	168	185	203	220				
36				118	139	160	180	199	217	235				
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 52 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.58	.60	.62	.64	.66	.68	.70	.73	.75	.77
8	.80	.82	.85	.88	.91	.94	.97	1.00	1.03	1.07
9	1.10	1.14	1.18	1.21	1.25	1.29	1.33	1.38	1.42	1.47

Example: Volume of 16[a], 2-log tree of O.B.-Form Class 92 = 17 x 1.18 = 20.
Basic data: 52 trees from Pisgah and Nantahala National Forests and Tucker County, W. Virginia.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.404893 (logarithm d.b.h. inches) + .753712 (logarithm merch. ht. ft.) + .013933 (O.B.-Form Class) - 3.024582.
Average deviation of individual tree volumes from values estimated by the equation: ±6.7 percent.
Aggregate difference: estimated values 0.43 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 39.-WHITE PINE AND HEMLOCK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 83

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5										
11	3	4	5	6	7									
12	3	5	6	8	9	10								
13	4	6	8	9	11	12	13							
14	4	7	9	11	13	14	16	17						
15	5	8	11	13	15	17	18	20	22					
16	6	9	12	15	17	19	21	23	25	27				
17	7	11	14	17	20	22	25	27	29	31				
18	8	12	16	19	22	25	28	30	33	35				
19	9	14	18	22	25	29	32	35	37	40				
20	10	16	20	25	28	32	35	39	42	45				
21	11	17	23	27	32	36	40	43	47	50	53			
22	12	19	25	31	35	40	44	48	52	56	59			
23	14	21	28	34	39	44	49	53	58	62	66			
24	15	24	31	37	43	49	54	59	63	68	72	77		
25		26	34	41	47	53	59	64	70	74	79	84		
26		28	37	45	52	58	64	70	76	81	87	92	97	
27		31	40	49	56	64	70	77	83	89	94	100	105	
28		34	44	53	61	69	76	83	90	96	103	109	115	120
29		36	47	57	66	75	83	90	97	104	111	118	124	130
30		39	51	62	72	81	89	97	105	113	120	127	134	141
31		42	55	67	77	87	96	105	113	121	129	137	144	151
32		46	59	72	83	93	103	113	122	131	139	147	155	163
33		49	64	77	89	100	111	121	131	140	149	158	166	175
34			68	82	95	107	119	129	140	150	160	169	178	187
35			73	88	102	115	127	138	149	160	170	180	190	200
36			77	94	108	122	135	147	159	171	182	192	202	213
37			82	100	115	130	144	157	169	182	193	205	216	226
38				106	122	138	153	167	180	193	205	217	229	240
39				112	130	147	162	177	191	205	218	231	243	255
40				119	138	155	171	187	202	217	231	244	258	270
41				126	146	164	182	198	214	229	244	258	272	286
42				133	154	173	191	209	226	242	258	273	287	302
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Table above is for the average O.B.-Form Class of the 322 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5					.79	.81	.84	.86	.88	.90
6	.72	.73	.75	.77	1.03	1.05	1.08	1.11	1.14	1.17
7	.92	.95	.98	1.00	1.32	1.36	1.40	1.43	1.47	1.51
8	1.20	1.23	1.26	1.29						
9										

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.26 = 19.

Basic data: 322 trees from Cherokee, Pisgah, and Nantahala National Forests, and Bland County, Virginia.

Table constructed from the equation:

Logarithm Scribner bd. ft. vol. = 2.272700 (logarithm d.b.h. inches) + .654938 (logarithm merch. ht. ft.) + .011158 (O.B.-Form Class) - 2.482938.

Average deviation of individual tree volumes from values estimated by the equation: White pine ±6.5 percent; Hemlock ±7.1 percent.

Aggregate difference: estimated values - White pine 0.83 percent low; Hemlock 1.07 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
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TABLE 40.-LOBLOLLY PINE AND YELLOWPOPLAR

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	5	6	7	7						
11	2	4	5	6	7	8	9	10						
12	3	5	6	7	9	10	11	12	13					
13	4	6	8	9	11	12	13	14	16	17				
14	4	7	9	11	13	14	16	17	19	20	22			
15	5	8	11	13	15	17	19	21	22	24	26	27		
16	6	10	13	15	18	20	22	24	26	28	30	32		
17	7	11	15	18	21	24	26	29	31	33	35	37		
18		13	17	21	24	27	30	33	36	38	41	43		
19		15	20	24	28	31	35	38	41	44	47	49		
20		17	22	27	31	35	39	43	46	50	53	56		
21		19	25	31	36	40	44	49	53	56	60	64		
22		22	29	35	40	45	50	55	59	63	68	72		
23			32	39	45	51	56	61	66	71	76	80		
24			35	43	50	56	62	68	74	79	84	89		
25			39	48	55	62	69	76	82	88	93	99		
26			43	53	61	69	76	83	90	97	103	109		
27			48	58	67	76	84	92	99	106	113	120		
28			52	64	74	83	92	100	109	117	124	132		
29			57	69	80	91	100	110	119	127	136	144		
30			62	76	88	99	110	120	129	139	148	157		
31			68	82	95	107	119	130	141	151	161	170		
32				89	103	116	129	141	152	163	174	184		
33				96	111	126	139	152	164	177	188	199		
34				104	120	136	150	164	177	190	203	215		
35				111	129	146	162	177	191	205	218	231		
36				120	139	157	174	190	205	220	234	248		
37				128	149	168	186	203	220	236	251	266		
38				137	159	180	199	217	235	252	268	284		
39					170	192	212	232	251	269	287	304		
40					181	205	226	248	268	287	306	324		
41					193	218	241	264	284	306	325	344		
42					205	231	256	280	303	324	346	366		
43						246	272	297	321	344	367	389		
44						260	288	315	340	366	389	412		
45						275	305	333	361	386	411	436		
46						291	322	352	381	408	536	461		
47							340	372	402	432	459	486		
48							359	392	424	455	484	513		

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 712 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.54	.55	.57	.59
7	.61	.62	.64	.66	.68	.70	.72	.74	.77	.79
8	.81	.84	.86	.89	.92	.94	.97	1.00	1.03	1.06
9	1.09	1.12	1.16	1.19	1.23	1.27	1.30	1.34	1.38	1.43

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.16 = 17.
Basic data: 712 trees - Yellowpoplar from: Geo. Washington, Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio; Tucker County, W. Va.; Bland County, Virginia; and Chatham County, North Carolina. Loblolly pine from: Piedmont and northern coastal plain counties of South Carolina.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.524953 (logarithm d.b.h. inches) + .663803 (logarithm merch. ht. ft.) + .012822 (O.B.-Form Class) - 2.971420.
Average deviation of individual tree volumes from values estimated by the equation: Loblolly pine ±7.1 percent; Yellowpoplar ±7.6 percent.
Aggregate difference: estimated values - Loblolly pine 0.09 percent high; Yellowpoplar 3.28 percent high.

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December 1941

TABLE 41.-SHORTLEAF PINE AND VIRGINIA PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 87

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	4	5	6	7	8	9	10						
11	3	5	6	7	9	10	11	12	13	14	15			
12	3	6	8	9	11	12	14	15	16	18	19			
13	4	7	9	11	13	15	17	18	20	22	23			
14	5	8	11	14	16	18	20	22	24	26	28			
15	6	10	13	16	19	22	24	27	29	31	33			
16	7	12	16	19	22	26	29	31	34	37	39			
17	8	14	18	22	26	30	33	36	40	43	46			
18	10	16	21	26	30	34	38	42	46	49	53			
19	11	18	24	30	35	40	44	48	53	57	61			
20	13	21	28	34	40	45	50	55	60	64	69			
21		24	31	38	45	51	57	62	68	73	78			
22		26	35	43	50	57	64	70	76	82	88			
23			39	48	56	64	71	78	85	92	98			
24			44	54	63	71	80	87	95	102	109			
25			49	59	70	79	88	97	105	113	121			
26				66	77	88	98	107	116	125	134			
27				72	85	96	107	118	128	138	147			
28				79	93	105	118	129	140	151	161			
29				87	101	115	128	141	153	165	177			
30				94	110	126	140	154	167	180	192			
31				103	120	136	152	167	182	195	209			
32				111	130	148	165	181	197	212	226			
33				120	141	160	178	195	212	229	245			
34				130	152	173	192	211	229	247	264			
35				140	163	185	207	227	247	266	284			
36				150	175	199	222	244	265	285	305			
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 503 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6										
7	.63	.65	.67	.69	.70	.72	.74	.76	.79	.81
8	.83	.85	.88	.90	.92	.95	.97	1.00	1.03	1.05
9	1.08	1.11	1.14	1.18	1.21	1.24	1.27	1.31	1.34	1.38

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 19 x 1.14 = 12.
Basic data: 503 trees from Cherokee and Nantahala National Forests; and northeastern South Carolina.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.531456 (logarithm d.b.h. inches) + .703142 (logarithm merch. ht. ft.) + .011675 (O.B.-Form Class) - 2.843982.
Average deviation of individual tree volumes from values estimated by the equation: Shortleaf pine ±6.5 percent; Virginia pine ±6.5 percent.
Aggregate difference: estimated values - Shortleaf pine 2.18 percent high; Virginia pine 3.48 percent low.

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December 1941

TABLE 42.-SUGAR MAPLE, RED MAPLE, AND SWEET BIRCH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6									
11	2	4	5	6	7	8								
12	3	5	6	8	9	10	12	13	14	15	16			
13	3	6	8	9	11	13	14	15	17	18	19			
14	4	7	9	11	13	15	17	18	20	22	23			
15	5	8	11	13	15	18	20	22	24	25	27			
16	6	9	12	15	18	21	23	25	27	30	32			
17	7	11	14	18	21	24	26	29	32	34	36			
18	8	12	16	20	24	27	30	33	36	39	42			
19	9	14	19	23	27	31	34	38	41	44	47			
20	10	16	21	26	30	35	39	43	46	50	53			
21	11	18	24	29	34	39	43	48	52	56	60			
22	12	20	26	33	38	43	49	53	58	63	67			
23	13	22	29	36	42	48	54	59	64	70	74			
24	15	24	33	40	47	53	60	65	71	77	82			
25		27	36	44	52	59	65	72	78	85	90			
26		29	39	48	56	64	72	79	86	93	99			
27		32	43	53	62	70	79	86	94	101	109			
28		35	47	57	67	77	86	94	102	110	118			
29		38	51	62	73	83	93	102	111	120	128			
30		41	55	67	79	90	101	111	120	130	139			
31		44	59	73	86	98	109	120	130	140	150			
32		48	64	79	92	105	117	129	140	151	162			
33		51	69	84	99	113	126	139	151	163	174			
34		55	74	91	106	121	135	149	162	175	187			
35		59	79	97	114	130	145	159	173	187	200			
36		63	84	104	122	139	154	170	185	200	214			
37		67	90	111	130	148	165	182	197	213	228			
38		72	96	118	138	157	176	193	210	226	243			
39		76	102	125	147	168	187	206	223	241	258			
40		81	108	133	156	177	198	218	237	256	274			
41		86	115	141	165	188	210	231	251	271	290			
42		91	121	149	175	199	222	244	266	287	307			
43		96	128	157	185	210	235	259	281	303	325			
44					195	222	248	273	297	321	343			
45					206	234	262	288	313	337	361			
46					217	247	275	303	330	356	381			
47					228	259	290	319	347	374	400			
48					239	273	305	335	365	393	421			

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 247 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6			.61	.62	.64	.65	.67	.68	.70	.71
7	.73	.75	.76	.78	.80	.82	.84	.86	.87	.89
8	.91	.94	.96	.98	1.00	1.02	1.05	1.07	1.09	1.12
9	1.14	1.17	1.20	1.22	1.25	1.28	1.31	1.34	1.37	1.40

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 15 x 1.20 = 18.
Basic data: 247 trees from Pisgah and Nantahala National Forests; Tucker County, W. Va.; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.355638 (logarithm d.b.h. inches) + .714891 (logarithm merch. ht. ft.) + .009757 (O.B.-Form Class) - 2.551868.
Average deviation of individual tree volumes from values estimated by the equation: Sugar maple ±8.7 percent; Red maple ±8.3 percent; Sweet birch ±6.5 percent.
Aggregate difference: estimated values - Sugar maple 6.17 percent high; Red maple 4.11 percent low; Sweet birch 1.56 percent high.

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TABLE 43.-WHITE OAK, CHESTNUT OAK, EASTERN RED OAK, BLACK OAK, AND SCARLET OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 85

DBH	Number of 16.3-foot logs												
	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
In.	Gross volume in board feet (Tens)													
10	2	3	4	5	6	7								
11	2	4	5	6	7	9	10							
12	3	5	6	8	9	10	12	13						
13	3	6	8	9	11	13	14	16						
14	4	7	9	11	13	15	17	19	20					
15	5	8	11	13	16	18	20	22	24					
16	6	9	13	16	18	21	23	26	28	30				
17	7	11	15	18	21	24	27	30	32	35				
18	8	12	17	21	24	28	31	34	37	40				
19	9	14	19	23	27	31	35	39	42	45				
20	10	16	21	26	31	35	40	44	48	51				
21	11	18	24	30	35	40	44	49	53	58				
22	12	20	27	33	39	44	50	55	60	64				
23	13	22	30	37	43	49	55	61	66	72				
24	15	25	33	41	48	55	61	67	73	79				
25	16	27	36	45	53	60	67	74	81	87				
26	18	30	40	49	58	66	74	82	89	96				
27	20	33	44	54	64	72	81	89	97	105				
28	22	36	48	59	69	79	88	97	106	115				
29		39	52	64	75	86	96	106	115	124				
30		42	56	70	82	93	104	115	125	135				
31		46	61	75	88	101	113	124	135	146				
32		49	66	81	95	109	121	134	146	157				
33		53	71	87	103	117	131	144	157	169				
34		57	76	94	110	126	141	155	169	182				
35		61	81	100	118	135	151	166	181	195				
36		65	87	107	126	144	161	177	193	208				
37		69	93	115	135	154	172	189	206	222				
38			99	122	144	164	183	202	220	237				
39			105	130	153	174	195	215	234	252				
40			112	138	162	185	207	228	248	268				
41				146	172	196	219	242	263	284				
42				155	182	208	232	256	279	301				
43				164	193	220	246	271	295	318				
44				173	204	232	259	286	312	336				
45				183	215	245	274	302	329	355				
46				192	226	258	288	318	347	374				
47				203	238	272	304	335	365	394				
48				213	250	286	319	352	384	414				

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 1802 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.44	.45	.46	.48	.49	.50	.51	.52	.53	.55
6	.56	.57	.59	.60	.61	.63	.64	.66	.67	.69
7	.70	.72	.74	.76	.77	.79	.81	.83	.85	.87
8	.89	.91	.93	.96	.98	1.00	1.02	1.05	1.07	1.10
9	1.12	1.15	1.18	1.20	1.23	1.26	1.29	1.32	1.35	1.39

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 16 x 1.18 = 19.
Basic data: 1802 trees from Cherokee, Pisgah, Nantahala and Chattahoochee National Forests; Jackson County, Ohio; Garrett County, Md.; Hardy and Tucker Counties, W. Va.; Bland County, Virginia; and Chatham County, North Carolina.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.383987 (logarithm d.b.h. inches) + .724431 (logarithm merch. ht. ft.) + .010107 (O. B.-Form Class) - 2.634971.
Average deviation of individual tree volumes from values estimated by the equation: White oak ±8.2 percent; Chestnut oak ±7.1 percent; Eastern red oak ±7.3 percent; Black oak ±5.6 percent; Scarlet oak ±6.3 percent.
Aggregate difference: estimated values - White oak 4.25 percent low; Chestnut oak 4.07 percent high; Eastern red oak 2.66 percent high; Black oak 0.56 percent high; Scarlet oak 3.69 percent low.

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TABLE 44.-WHITE ASH AND BASSWOOD

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET SCRIBNER DECIMAL C LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet (Tens)													
10	2	3	4	5	6	7								
11	2	4	5	7	8	9								
12	3	5	7	8	10	11	12	14						
13	4	6	8	10	12	13	15	17						
14	4	7	10	12	14	16	18	20	22	24				
15	5	9	12	14	17	19	22	24	26	28				
16	6	10	14	17	20	23	25	28	30	33				
17	7	12	16	20	23	26	29	32	35	38				
18	8	14	18	22	26	30	34	37	41	44	47			
19	9	15	21	26	30	35	39	43	46	50	54			
20	11	18	24	29	34	39	44	48	53	57	61			
21		20	27	33	39	44	49	55	59	64	69			
22		22	30	37	43	50	55	61	67	72	77			
23		25	33	41	48	55	62	68	74	80	86			
24		28	37	46	54	62	69	76	83	89	96			
25		30	41	51	60	68	76	84	91	99	106			
26		34	45	56	66	75	84	92	101	109	117			
27		37	50	61	72	82	92	102	111	120	128			
28		40	54	67	79	90	101	111	121	131	140			
29			59	73	86	98	110	121	132	143	153			
30			64	79	94	107	120	132	144	155	166			
31			70	86	101	116	130	143	156	168	181			
32			76	93	110	125	140	154	168	182	195			
33			81	101	118	135	151	167	182	196	211			
34				108	127	146	163	180	196	211	227			
35				116	137	156	175	193	210	227	244			
36				125	147	168	188	207	225	243	261			
37				134	157	180	201	221	241	261	280			
38				143	168	192	215	237	258	279	298			
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 192 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.54	.55	.57	.59
7	.61	.62	.64	.66	.68	.70	.72	.74	.77	.79
8	.81	.84	.86	.89	.91	.94	.97	1.00	1.03	1.06
9	1.09	1.12	1.16	1.19	1.23	1.27	1.31	1.34	1.38	1.43

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 17 x 1.16 = 20.
Basic data: 192 trees from Pisgah and Nantahala National Forests and Tucker County, West Virginia.
Table constructed from the equation:
Logarithm Scribner bd. ft. vol. = 2.473605 (logarithm d.b.h. inches) + .729833 (logarithm merch. ht. ft.) + .012842 (O.B.-Form Class) - 2.975240.
Average deviation of individual tree volumes from values estimated by the equation: White ash ±6.8 percent; Basswood ±8.3 percent.
Aggregate difference: estimated values - White ash 1.57 percent high; Basswood 1.64 percent low.

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TABLE 45.-EASTERN WHITE PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 82

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board foot													
10	12	19	25	30										
11	16	25	32	38	44									
12	20	31	40	48	56	62								
13	25	39	50	60	69	77	85							
14	31	48	61	73	85	95	104	114						
15	37	57	74	89	102	114	126	137	147					
16	44	68	88	106	121	136	150	163	175	188				
17	52	81	104	124	143	160	177	192	207	221				
18	61	94	121	146	167	188	206	224	242	258				
19	71	109	141	168	194	217	239	260	280	299				
20	81	125	162	194	223	250	275	298	321	344				
21	93	143	184	221	254	285	314	341	367	393	417			
22	105	163	209	251	288	324	356	387	417	445	472			
23	119	183	236	283	325	365	402	436	470	502	533			
24		206	266	318	365	409	451	490	527	564	598	632		
25		230	296	355	407	457	504	547	589	630	668	706		
26		256	330	394	454	509	561	610	656	702	745	785	826	
27			366	438	504	564	621	674	726	776	824	871	914	
28			404	483	555	622	686	745	802	857	910	959	1009	1057
29			444	531	611	684	753	820	883	942	1000	1057	1112	1164
30				582	670	750	826	897	968	1033	1096	1159	1219	1276
31				637	731	820	904	982	1057	1130	1199	1265	1330	1393
32				693	798	893	984	1069	1153	1230	1306	1380	1452	1521
33					867	973	1072	1164	1253	1340	1419	1500	1578	1652
34					940	1054	1161	1262	1358	1452	1542	1626	1710	1791
35						1140	1256	1365	1469	1570	1667	1762	1849	1941
36						1230	1355	1472	1585	1694	1799	1901	1995	2094
37							1459	1589	1710	1828	1936	2046	2153	2254
38							1570	1706	1837	1963	2084	2198	2312	2427
39										2109	2239	2360	2483	2600
40										2259	2393	2529	2661	2786
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 210 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.68	.70	.72	.75	.77	.80	.82	.85	.88	.91
8	.94	.97	1.00	1.03	1.07	1.10	1.14	1.18	1.21	1.25
9	1.29	1.34	1.38	1.43	1.47					

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 106 x 1.38 = 146 bd. ft.
Basic data: 210 trees from Cherokee, Pisgah and Nantahala National Forests.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.714961 (logarithm d.b.h. inches) + .626288 (logarithm merch. ht. ft.) + .014060 (O.B.-Form Class) - 3.345989.
Average deviation of individual tree volumes from values estimated by the equation: ±7.4 percent.
Aggregate difference: estimated values 0.17 percent high.

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TABLE 46.-LOBLOLLY PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 86

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	8	13	17	20	23	26								
11	12	18	24	28	32	36	40	44						
12	16	25	32	38	44	49	54	59	63					
13	21	32	42	50	57	64	71	77	83	89				
14	27	42	54	64	74	83	91	99	107	114	121			
15	34	53	68	81	94	105	116	126	136	144	154	162		
16	42	66	85	101	117	131	144	157	169	180	191	202		
17	52	81	104	125	144	161	177	193	208	222	236	249		
18		98	126	152	175	196	216	234	252	270	286	303		
19		118	152	182	210	236	259	282	303	324	344	364		
20		141	182	217	250	280	309	336	361	386	410	434		
21			214	256	295	331	365	396	427	456	484	512		
22			251	301	346	388	428	464	500	535	568	600		
23			292	350	403	452	498	541	582	622	661	698		
24			338	405	466	522	575	625	674	719	764	807		
25			389	466	536	601	662	719	774	828	879	929		
26				532	612	687	757	822	885	946	1005	1062		
27				607	698	782	861	938	1009	1079	1146	1208		
28				686	789	885	975	1059	1143	1219	1294	1368		
29					889	998	1099	1194	1285	1374	1459	1542		
30					998	1119	1233	1340	1445	1542	1637	1730		
31					1117	1253	1380	1500	1614	1726	1832	1936		
32						1396	1538	1671	1799	1923	2042	2158		
33						1552	1710	1858	2000	2138	2270	2399		
34						1718	1892	2056	2218	2366	2512	2655		
35						1897	2089	2270	2443	2612	2773	2931		
36						2098	2301	2500	2692	2877	3055	3228		
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 378 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.53	.55	.58	.60	.62	.65	.67	.70	.73	.76
8	.79	.82	.85	.89	.92	.96	1.00	1.04	1.08	1.13
9	1.17	1.22	1.27	1.32	1.37	1.43	1.49	1.54	1.61	1.67

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 101 x 1.27 = 128 bd. ft.
Basic data: 378 trees from Piedmont and northern coastal plain counties of South Carolina.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 3.415548 (logarithm d.b.h. inches) + .627998 (logarithm merch. ht. ft.) + .017182 (O.B.-Form Class) - 4.534534.
Average deviation of individual tree volumes from values estimated by the equation: ±8.8 percent.
Aggregate difference: estimated values 2.74 percent high.

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TABLE 47.-VIRGINIA PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 84

DBH In.	-Number of 16.3-foot logs- ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	13	20	26	32	36	41	45	49						
11	18	27	35	43	49	55	61	66	71	76	81			
12	23	36	47	56	65	73	80	87	94	101	107			
13	30	47	60	72	83	94	103	112	121	130	138			
14	38	59	76	91	105	118	131	142	153	164	174			
15	47	73	95	114	131	147	163	177	190	204	217			
16	58	90	116	140	161	181	199	217	234	250	266			
17	70	109	141	169	195	219	241	262	283	303	322			
18	84	130	169	202	233	262	289	315	340	363	386			
19	100	154	200	240	277	311	344	373	403	430	458			
20	117	182	236	282	326	366	404	440	473	506	538			
21		212	275	330	380	427	471	513	552	590	628			
22		246	318	382	441	494	546	594	640	684	728			
23			366	440	507	569	628	684	736	787	838			
24				504	579	652	718	782	843	902	957			
25							817	889	959	1026	1089			
26								1007	1086	1161	1233			
27														
28														
29														
30														
31														
32														
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 179 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.63	.65	.67	.69	.72	.74	.77	.79	.82	.85
8	.88	.91	.94	.97	1.00	1.03	1.07	1.10	1.14	1.18
9	1.22	1.26	1.31	1.35	1.39	1.44	1.49	1.54	1.59	1.65

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 140 x 1.31 = 183 bd. ft.
Basic data: 179 trees from Cherokee and Nantahala National Forests.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 3.163017 (logarithm d.b.h. inches) + .636443 (logarithm merch. ht. ft.) + .014446 (O.B.-Form Class) - 3.840515.
Average deviation of individual tree volumes from values estimated by the equation: ±6.4 percent.
Aggregate difference: estimated values 0.17 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 48.-SHORTLEAF PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 89

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	14	21	27	32	37	42	46							
11	18	29	37	44	51	57	63	69						
12	25	38	49	59	68	76	84	91						
13	32	49	64	77	88	99	109	119						
14	41	63	81	98	112	126	139	151	163					
15	51	79	102	122	141	158	174	190	204					
16	63	98	126	151	174	195	215	234	252	270	286			
17	77	119	154	184	212	238	262	286	308	329	349			
18	93	144	186	223	256	288	317	344	372	397	422			
19	111	172	222	266	306	344	378	411	444	474	504			
20		203	262	315	362	406	448	486	525	560	596			
21		238	308	369	425	476	525	572	615	658	698			
22		278	359	430	494	555	611	665	716	766	813			
23			415	498	573	643	708	769	830	887	942			
24			478	572	658	738	813	885	953	1019	1081			
25			546	653	752	843	931	1012	1089	1164	1236			
26				743	855	959	1059	1151	1239	1324	1406			
27				841	968	1086	1197	1303	1403	1500	1592			
28				948	1091	1225	1349	1469	1581	1690	1795			
29				1064	1225	1374	1514	1648	1774	1897	2014			
30				1189	1368	1535	1690	1841	1982	2118	2249			
31				1324	1524	1710	1884	2051	2208	2360	2506			
32				1469	1690	1897	2089	2275	2449	2618	2780			
33				1626	1871	2099	2312	2518	2710	2897	3076			
34				1795	2065	2312	2553	2773	2992	3192	3388			
35				1972	2270	2547	2805	3048	3289	3516	3733			
36				2163	2489	2793	3076	3342	3606	3855	4093			
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 324 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7					.59	.61	.63	.66	.68	.70
8	.73	.76	.78	.81	.84	.87	.90	.93	.97	1.00
9	1.04	1.07	1.11	1.15	1.19	1.23	1.28	1.32	1.37	1.42

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 151 x 1.11 = 168 bd. ft.
Basic data: 324 trees from Cherokee and Nantahala National Forests; and northeastern South Carolina.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 3.279536 (logarithm d.b.h. inches) + .630310 (logarithm merch. ht. ft.) + .015242 (O.B.-Form Class) - 4.079383.
Average deviation of individual tree volumes from values estimated by the equation: ±8.7 percent.
Aggregate difference: estimated values 1.20 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 49.-EASTERN HEMLOCK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 85

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	14	20	26	31										
11	18	27	34	40	46									
12	23	34	43	51	58	65								
13	28	42	54	64	73	81								
14	35	52	66	78	89	100	109							
15	42	63	80	95	108	120	132							
16	50	76	96	114	129	144	158	171						
17	59	89	114	134	154	171	187	202	217					
18	70	105	133	158	180	200	219	237	254	270				
19	81	122	154	183	209	233	255	275	296	315				
20	93	140	178	211	241	268	294	318	340	362				
21	107	161	204	242	276	307	336	364	390	415				
22	122	183	232	275	314	350	383	414	444	472	500			
23	137	207	263	311	356	395	434	469	502	535	566			
24	155	233	296	351	400	446	488	527	566	603	637			
25		261	331	393	448	499	546	592	634	674	713			
26		291	370	438	500	556	610	659	706	752	796			
27		324	410	486	555	618	678	733	785	836	883			
28		358	454	538	614	684	748	811	869	925	977	1030		
29		394	501	593	678	753	826	891	957	1019	1079	1135		
30		434	550	652	743	828	908	982	1052	1119	1183	1247		
31		474	603	714	815	908	993	1076	1153	1227	1297	1365		
32		519	658	780	889	991	1084	1175	1259	1340	1416	1493	1563	
33		565	718	849	968	1079	1183	1279	1371	1459	1542	1626	1702	
34		614	780	923	1054	1172	1285	1390	1489	1585	1679	1766	1849	
35			845	1000	1143	1271	1393	1507	1614	1718	1820	1914	2004	
36			914	1081	1236	1374	1507	1629	1746	1858	1968	2070	2168	
37			986	1167	1334	1483	1626	1758	1884	2004	2123	2234	2339	
38				1259	1435	1600	1750	1892	2032	2163	2286	2404	2523	
39				1352	1542	1718	1884	2037	2183	2323	2455	2588	2710	
40				1452	1656	1845	2018	2183	2344	2495	2636	2773	2911	
41				1552	1774	1972	2163	2339	2506	2667	2825	2972	3112	
42				1660	1897	2109	2312	2495	2679	2851	3020	3177	3327	
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 112 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7					.72	.75	.77	.79	.81	.84
8	.86	.89	.91	.94	.97	1.00	1.03	1.06	1.09	1.12
9	1.16	1.19	1.22	1.26	1.30	1.34	1.38	1.42	1.46	1.50

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 114 x 1.22 = 139 bd. ft.
Basic data: 112 trees from Cherokee, Pisgah and Nantahala National Forests; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.780205 (logarithm d.b.h. inches) + .589916 (logarithm merch. ht. ft.) + .012702 (O.B.-Form Class) - 3.264825.
Average deviation of individual tree volumes from values estimated by the equation: ±8.8 percent.
Aggregate difference: estimated values 0.36 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 50.-SWEET BIRCH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	10	17	23	28										
11	14	22	30	37										
12	18	29	39	48										
13	22	37	49	61	71									
14	27	46	61	75	88									
15	34	56	75	92	108									
16	41	67	90	111	131	149								
17	49	80	108	132	156	178								
18	57	95	127	157	184	210	235	259						
19	67	111	149	184	216	247	275	303						
20	78	129	173	213	251	286	320	352						
21	90	149	200	246	289	330	369	406						
22	103	171	229	282	331	378	423	466						
23	118	194	261	321	377	430	481	530						
24	133	220	295	363	428	488	544	600						
25		248	332	409	481	550	614	676						
26		278	372	459	540	617	689	759						
27		310	416	513	603	689	769	847						
28		345	462	570	670	766	855	942						
29		382	513	632	743	847	948	1045						
30		422	566	698	820	935	1047	1153						
31		464	624	767	904	1030	1153	1271						
32		509	684	841	991	1130	1265	1393						
33														
34														
35														
36														
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 54 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6			.59	.60	.62	.63	.65	.66	.68	.70
7	.71	.73	.75	.76	.78	.80	.82	.84	.86	.88
8	.91	.93	.95	.98	1.00	1.02	1.05	1.07	1.10	1.13
9	1.15	1.18	1.21	1.24	1.27	1.30	1.33	1.37	1.40	1.44

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 111 x 1.21 = 134 bd. ft.
Basic data: 54 trees from Pisgah and Nantahala National Forests and Bland County, Va.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.922970 (logarithm d.b.h. inches) + .725017 (logarithm merch. ht. ft.) + .010465 (O.B.-Form Class) - 3.450154.
Average deviation of individual tree volumes from values estimated by the equation: ±7.9 percent.
Aggregate difference: estimated values 0.02 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 51.-EASTERN RED OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 85

DBH In.	Number of 16.3-foot logs											
	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	11	18	24	29	33	38								
11	15	24	31	38	44	50								
12	19	30	40	48	56	64								
13	24	38	50	61	71	80	89							
14	29	47	62	75	87	99	110							
15	36	57	75	91	106	120	134	146						
16	43	69	91	110	128	145	161	176						
17	51	82	108	131	152	172	191	209						
18	60	96	127	154	180	203	225	247	267					
19	70	113	148	180	209	237	263	288	312					
20	82	130	172	208	243	274	305	333	361					
21		150	197	240	279	316	351	384	415	446				
22		171	225	274	319	361	401	438	474	509				
23		194	256	311	362	409	455	498	540	579				
24		220	290	352	409	462	514	562	610	655				
25		247	325	395	460	520	578	632	684	734				
26		277	364	443	514	582	646	708	766	822				
27		308	406	493	573	649	721	789	853	916				
28		342	451	547	637	719	800	875	946	1019				
29		378	498	605	703	796	883	968	1047	1125				
30		417	548	667	774	877	973	1067	1153	1239				
31		458	603	733	851	964	1069	1172	1268	1361				
32		501	659	802	933	1054	1172	1282	1387	1489				
33		548	721	875	1019	1153	1279	1400	1517	1629				
34		597	785	955	1109	1259	1393	1528	1652	1774				
35		649	853	1038	1205	1365	1514	1660	1795	1928				
36		703	925	1125	1306	1479	1641	1799	1945	2089				
37			1000	1216	1413	1600	1774	1945	2104	2259				
38			1081	1312	1528	1726	1919	2099	2270	2443				
39			1164	1413	1644	1862	2065	2259	2449	2630				
40			1250	1521	1770	2000	2223	2432	2624	2825				
41				1633	1897	2148	2382	2606	2825	3034				
42				1746	2032	2301	2553	2793	3027	3251				
43				1871	2178	2460	2729	2992	3236	3475				
44				2000	2323	2630	2917	3192	3459	3715				
45				2128	2477	2805	3112	3404	3690	3963				
46				2270	2642	2985	3311	3631	3926	4217				
47				2410	2805	3177	3524	3855	4178	4487				
48				2564	2979	3381	3741	4093	4436	4764				

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Block indicates extent of basic data for all O.B.-Form Classes.

Table above is for the average O.B.-Form Class of the 280 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6							.57	.59	.61	.62
7	.64	.66	.68	.70	.72	.74	.77	.79	.81	.84
8	.86	.89	.92	.94	.97	1.00	1.03	1.06	1.09	1.12
9	1.16	1.19	1.23	1.27	1.31	1.34	1.38	1.43	1.47	1.51

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 110 x 1.23 = 135 bd. ft.

Basic data: 280 trees from Cherokee, Pisgah, and Nantahala National Forests; Jackson County, Ohio; Garrett County, Md.; Tucker County, W. Va.; and Bland County, Va.

Table constructed from the equation:

Logarithm Doyle-Scribner bd. ft. vol. = 2.865214 (logarithm d.b.h. inches) + .677057 (logarithm merch. ht. ft.) + .012839 (O.B.-Form Class) - 3.524248.

Average deviation of individual tree volumes from values estimated by the equation: ±9.7 percent.

Aggregate difference: estimated values 1.93 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 52.-SCARLET OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 87

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	12	20	26	32	38	43								
11	16	26	35	42	50	57	63							
12	20	33	45	55	64	73	81	89						
13	26	42	56	69	81	92	103	113						
14	32	52	70	86	100	114	127	140	152					
15	39	64	85	104	122	139	155	171	186					
16	47	77	103	126	148	168	188	206	224	242				
17	56	92	122	150	176	200	223	246	267	288				
18	66	108	144	177	208	237	264	290	316	340				
19	78	127	169	208	243	277	308	339	369	397				
20	90	147	196	240	282	321	358	394	428	461				
21	104	169	226	277	325	370	412	453	493	531				
22	119	194	259	317	372	423	472	519	564	608				
23	135	221	294	361	423	481	537	590	641	692				
24	153	250	333	408	479	544	608	667	726	782				
25	172	281	375	459	538	612	684	752	817	881				
26		315	420	515	604	687	767	843	916	986				
27		352	469	575	673	766	855	940	1023	1102				
28		391	521	638	748	851	951	1045	1135	1225				
29		432	577	708	828	942	1052	1156	1256	1355				
30		476	637	780	914	1040	1161	1276	1387	1493				
31		525	700	859	1005	1143	1276	1403	1528	1644				
32		575	767	940	1102	1253	1400	1538	1671	1803				
33			840	1028	1205	1371	1531	1683	1828	1972				
34			914	1122	1315	1496	1667	1837	1995	2148				
35				1219	1429	1626	1816	1995	2168	2339				
36				1324	1552	1766	1968	2163	2355	2535				
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 213 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.53	.55	.56	.58
7	.60	.62	.64	.66	.68	.70	.72	.74	.76	.79
8	.81	.84	.86	.89	.91	.94	.97	1.00	1.03	1.06
9	1.09	1.13	1.16	1.20	1.23	1.27	1.31	1.35	1.39	1.44

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 126 x 1.16 = 146 bd. ft.
Basic data: 213 trees from Cherokee, Pisgah, Nantahala and Chattahoochee National Forests; Bland County, Virginia and Chatham County, North Carolina.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.901047 (logarithm d.b.h. inches) + .709521 (logarithm merch. ht. ft.) + .013049 (O.B.-Form Class) - 3.601946.
Average deviation of individual tree volumes from values estimated by the equation: ±6.9 percent.
Aggregate difference: estimated values 0.24 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 53.-BLACK OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	11	18	24	29	35	39								
11	14	24	31	39	45	51								
12	18	30	40	49	58	66	73							
13	23	38	50	62	72	82	92	101						
14	28	46	62	76	89	102	114	125	136					
15	34	56	75	92	108	124	138	152	165					
16	41	68	90	111	130	148	165	182	198					
17	49	80	107	132	154	176	196	216	234					
18	58	94	126	154	181	206	231	254	275					
19	67	110	147	180	211	240	268	295	321					
20	77	127	169	208	244	278	310	341	372					
21		146	194	239	280	319	356	392	426					
22		166	222	272	319	364	406	447	485					
23		188	252	309	362	412	460	506	551					
24		212	284	348	408	464	519	570	621					
25		238	318	391	458	521	582	640	697					
26		267	356	436	512	583	652	716	778					
27		296	396	485	570	649	724	796	867					
28		328	438	538	631	719	802	883	959					
29		362	484	594	697	794	885	975	1059					
30		399	532	653	766	873	975	1072	1164					
31		438	585	718	841	957	1069	1175	1279					
32		479	640	783	920	1047	1169	1285	1400					
33		522	697	855	1002	1143	1276	1403	1524					
34		568	759	931	1091	1245	1387	1528	1660					
35		617	824	1012	1186	1349	1507	1656	1803					
36		667	891	1094	1282	1462	1629	1795	1950					
37		721	964	1183	1387	1578	1762	1936	2109					
38			1038	1274	1493	1702	1901	2089	2270					
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 150 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5									.62	.64
6										
7	.66	.68	.70	.72	.74	.76	.79	.81	.84	.86
8	.89	.91	.94	.97	1.00	1.03	1.06	1.09	1.13	1.16
9	1.20	1.24	1.27	1.31	1.35	1.39	1.44	1.48	1.52	1.57

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 111 x 1.27 = 141 bd. ft.
Basic data: 150 trees from Cherokee, Nantahala and Chattahoochee National Forests; Jackson County, Ohio, and Bland County, Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.822522 (logarithm d.b.h. inches) + .712949 (logarithm merch. ht. ft.) + .013081 (O.B.-Form Class) - 3.531305.
Average deviation of individual tree volumes from values estimated by the equation: ±7.2 percent.
Aggregate difference: estimated values 1.32 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 54.-WHITE OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 84

DBH In.	-Number of 16.3-foot logs- ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	12	18	23	28	32									
11	16	24	31	37	43	48								
12	20	31	40	48	55	62								
13	26	40	51	61	70	79	86							
14	32	49	63	76	87	98	108							
15	39	60	78	93	107	120	132							
16	47	73	94	113	130	145	160	174						
17	57	88	113	135	155	174	191	208						
18	67	104	133	160	184	206	227	247	266					
19	79	122	157	188	216	242	266	289	311					
20	92	142	182	218	251	281	310	336	362	387				
21	106	163	210	252	290	325	358	389	419	448				
22	122	188	242	289	333	373	410	447	481	513				
23	139	214	275	330	379	426	469	509	548	586				
24	157	243	313	374	430	482	531	578	622	664				
25		274	353	423	485	544	600	652	702	750				
26		308	396	474	546	611	673	733	789	841				
27		344	444	531	611	684	753	818	881	942				
28		383	494	592	679	762	840	912	982	1050				
29		426	548	656	753	845	931	1012	1089	1164				
30		470	605	724	834	933	1028	1117	1205	1285				
31		518	667	800	918	1030	1135	1233	1327	1419				
32		569	733	877	1009	1130	1245	1352	1459	1556				
33		624	804	962	1104	1239	1365	1483	1596	1706				
34		681	877	1050	1208	1352	1489	1622	1746	1862				
35		741	955	1146	1315	1476	1626	1766	1901	2032				
36		805	1040	1245	1429	1603	1766	1919	2065	2208				
37			1127	1349	1552	1738	1914	2080	2239	2393				
38			1219	1459	1679	1879	2070	2254	2427	2588				
39			1318	1578	1811	2032	2239	2432	2618	2799				
40			1419	1698	1954	2188	2410	2624	2825	3013				
41				1828	2104	2355	2594	2818	3034	3243				
42				1963	2254	2529	2786	3027	3258	3483				
43				2104	2421	2710	2985	3251	3499	3733				
44				2254	2594	2904	3199	3475	3741	3999				
45				2410	2767	3105	3420	3715	3999	4266				
46				2570	2958	3311	3648	3963	4266	4560				
47				2742	3148	3532	3890	4227	4550	4853				
48				2911	3350	3758	4130	4498	4842	5164				

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 688 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.38	.39	.40	.41	.42	.43	.45	.46	.47	.49
6	.50	.52	.53	.55	.56	.58	.59	.61	.63	.65
7	.67	.69	.71	.73	.75	.77	.79	.82	.84	.86
8	.89	.92	.94	.97	1.00	1.03	1.06	1.09	1.12	1.15
9	1.19	1.22	1.26	1.30	1.33	1.37	1.41	1.46	1.50	1.54

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 113 x 1.26 = 142 bd. ft.
Basic data: 688 trees from Cherokee, Pisgah, Nantahala and Chattahoochee National Forests; Jackson County, Ohio; Garrett County, Md.; Hardy County, W. Va.; Bland County, Virginia and Chatham County, North Carolina.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.960694 (logarithm d.b.h. inches) + .625508 (logarithm merch. ht. ft.) + .012540 (O.B.-Form Class) - 3.512881.
Average deviation of individual tree volumes from values estimated by the equation: ±9.4 percent.
Aggregate difference: estimated values 2.32 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 55.-CHESTNUT OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 86

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	11	18	23											
11	15	23	30	37	42	47								
12	19	30	39	47	54	61								
13	24	38	49	59	69	77								
14	30	47	61	74	85	96								
15	37	58	75	90	104	117	129							
16	45	70	90	109	126	141	156							
17	53	83	108	130	150	169	186							
18	63	98	128	154	177	200	220							
19	74	115	149	180	208	233	258	280						
20	85	133	173	208	240	271	299	326						
21	98	154	200	240	277	312	345	376						
22	113	176	229	275	318	357	394	430						
23	128	200	260	313	361	407	450	490	528					
24	145	227	294	355	409	460	509	555	598					
25	164	255	332	399	461	519	573	624	673					
26	183	286	372	448	518	582	643	700	755	809				
27	205	320	415	500	577	649	718	782	843	904				
28	228	356	461	556	641	721	798	869	938	1005				
29		394	512	615	711	800	883	962	1038	1112				
30		434	565	679	783	883	975	1062	1146	1227				
31		479	621	748	863	970	1072	1169	1262	1349				
32		525	681	820	946	1064	1175	1282	1384	1479				
33		574	745	897	1035	1164	1285	1403	1514	1618				
34		627	813	980	1130	1271	1403	1531	1652	1766				
35		681	885	1064	1230	1384	1528	1663	1795	1923				
36		740	959	1156	1334	1500	1660	1807	1950	2084				
37			1040	1253	1445	1626	1795	1954	2109	2259				
38			1125	1352	1563	1758	1941	2113	2280	2443				
39			1213	1459	1687	1897	2094	2280	2460	2636				
40			1306	1570	1816	2042	2254	2455	2649	2838				
41			1403	1687	1950	2193	2421	2636	2844	3048				
42			1503	1811	2089	2350	2594	2831	3055	3266				
43				1941	2239	2518	2780	3034	3273	3499				
44				2075	2393	2692	2979	3243	3499	3741				
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 471 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.42	.43	.44	.45	.46	.47	.48	.50	.51	.52
6	.53	.54	.56	.57	.59	.60	.62	.64	.65	.66
7	.68	.70	.71	.73	.75	.76	.78	.80	.82	.84
8	.86	.88	.91	.93	.95	.98	1.00	1.02	1.05	1.07
9	1.10	1.13	1.15	1.18	1.21	1.24	1.27	1.30	1.33	1.37

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 109 x 1.15 = 125 bd. ft.
Basic data: 471 trees from Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.913098 (logarithm d.b.h. inches) + .644365 (logarithm merch. ht. ft.) + .010489 (O.B.-Form Class) - 3.347888.
Average deviation of individual tree volumes from values estimated by the equation: ±8.4 percent.
Aggregate difference: estimated values 0.15 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 56.-YELLOWPOPLAR

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 88

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	13	20	26	30	35	38	42	46						
11	18	27	34	40	46	51	56	60						
12	23	34	44	52	59	66	72	78						
13	29	43	55	65	74	83	91	98						
14	36	54	68	81	92	103	112	121	130					
15	44	66	84	99	113	126	137	149	159					
16	53	79	101	119	136	151	166	179	192					
17	63	95	120	142	162	181	198	214	229					
18		112	142	168	191	213	233	252	270					
19		131	166	197	224	250	274	296	317	337				
20		152	193	228	260	290	317	343	367	391				
21		175	222	263	300	334	366	395	424	451				
22		200	254	301	344	383	419	453	485	516				
23			290	343	391	436	476	515	552	588	621			
24			327	388	443	493	540	583	625	665	703			
25			369	436	498	555	607	656	703	748	792			
26			414	490	558	622	681	736	789	840	887	933		
27			461	547	624	695	760	822	881	938	991	1042		
28			513	608	693	773	845	914	980	1042	1102	1159		
29			568	673	767	855	935	1012	1084	1153	1219	1282		
30			627	743	847	944	1033	1109	1197	1274	1346	1416		
31			690	817	931	1038	1135	1227	1315	1400	1483	1560		
32				895	1021	1138	1245	1346	1442	1535	1622	1710		
33				980	1117	1245	1361	1472	1578	1679	1778	1871		
34				1069	1219	1358	1486	1607	1722	1832	1936	2037		
35				1164	1327	1479	1618	1750	1875	1995	2109	2218		
36				1262	1439	1603	1754	1897	2032	2163	2291	2410		
37				1368	1560	1738	1901	2056	2203	2344	2477	2606		
38				1479	1683	1875	2051	2218	2377	2535	2679	2818		
39					1816	2023	2213	2393	2564	2729	2891	3041		
40					1954	2178	2382	2576	2761	2938	3112	3273		
41					2104	2339	2559	2767	2972	3162	3342	3516		
42					2254	2512	2748	2972	3184	3388	3581	3767		
43						2692	2944	3184	3412	3631	3837	4036		
44						2877	3148	3404	3648	3882	4102	4315		
45						3069	3357	3631	3890	4140	4375	4613		
46						3273	3581	3873	4150	4416	4667	4920		
47							3811	4121	4416	4699	4966	5224		
48							4055	4385	4699	5000	5284	5559		

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 334 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.46	.48	.50	.52
7	.53	.55	.57	.59	.61	.64	.66	.68	.71	.73
8	.76	.78	.81	.84	.87	.90	.93	.97	1.00	1.04
9	1.07	1.11	1.15	1.19	1.23	1.28	1.32	1.37	1.42	1.47

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 119 x 1.15 = 137 bd. ft.
Basic data: 334 trees from Geo. Washington, Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio; Tucker County W. Va.; Bland County, Virginia; and Chatham County, North Carolina.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.909762 (logarithm d.b.h. inches) + .587714 (logarithm merch. ht. ft.) + .015130 (O.B.-Form Class) - 3.648002.
Average deviation of individual tree volumes from values estimated by the equation: ±8.7 percent.
Aggregate difference: estimated values 0.84 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 57.-SUGAR MAPLE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	12	18	24	28	33									
11	15	24	31	37	43	48								
12	19	30	39	47	55	61	68	74	80	85	91			
13	24	38	49	59	68	77	85	92	100	107	113			
14	30	47	61	73	84	95	104	114	123	132	140			
15	36	57	74	89	102	115	127	138	149	160	170			
16	44	68	89	106	123	138	152	166	179	191	204			
17	52	81	105	126	146	164	181	197	212	227	242			
18	61	95	123	148	171	192	212	231	250	267	284			
19	71	111	144	173	200	224	247	270	290	311	330			
20	82	128	166	200	230	259	286	311	336	359	382			
21		147	190	229	264	297	328	357	386	412	438			
22		168	217	261	301	339	374	407	440	470	500			
23		190	246	296	341	384	424	461	498	533	566			
24		214	277	333	386	432	478	521	561	601	638			
25		240	311	374	432	485	536	583	630	674	716			
26		268	348	419	483	543	598	653	703	753	800			
27		298	387	466	537	604	667	726	783	838	891			
28		330	428	515	596	668	738	804	867	929	986			
29		365	473	569	656	738	815	887	957	1023	1089			
30		402	521	627	723	813	895	977	1052	1127	1197			
31		441	572	687	792	891	984	1072	1156	1236	1315			
32		481	624	752	867	975	1074	1172	1262	1352	1435			
33		525	681	818	946	1062	1172	1276	1377	1476	1567			
34		572	741	891	1028	1156	1276	1390	1500	1603	1706			
35		619	804	968	1117	1253	1384	1510	1626	1742	1849			
36		671	871	1047	1208	1358	1500	1633	1762	1884	2004			
37		724	940	1132	1306	1469	1618	1766	1901	2037	2163			
38		782	1014	1219	1406	1581	1746	1901	2051	2198	2333			
39		841	1091	1312	1514	1702	1879	2046	2208	2360	2512			
40		904	1172	1409	1626	1828	2018	2198	2371	2535	2698			
41		968	1256	1510	1742	1959	2163	2355	2541	2723	2891			
42		1035	1343	1614	1866	2099	2312	2523	2716	2911	3090			
43		1107	1439	1730	1995	2244	2472	2698	2904	3112	3311			
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 105 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6							.56	.58	.60	.62
7	.64	.66	.68	.70	.72	.75	.77	.80	.82	.85
8	.88	.91	.94	.97	1.00	1.03	1.07	1.10	1.14	1.18
9	1.21	1.25	1.30	1.34	1.38	1.43	1.48	1.52	1.57	1.63

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 106 x 1.30 = 138 bd. ft.
Basic data: 105 trees from Pisgah and Nantahala National Forests.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.819509 (logarithm d.b.h. inches) + .641480 (logarithm merch. ht. ft.) + .014070 (O.B.-Form Class) - 3.520644.
Average deviation of individual tree volumes from values estimated by the equation: ±9.5 percent.
Aggregate difference: estimated values 1.10 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 58.-RED MAPLE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 84

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	12	19	25	30										
11	16	26	33	40	46									
12	21	33	42	51	59	66								
13	27	41	54	64	74	83								
14	33	51	66	80	92	103	114	124						
15	40	63	81	97	112	126	139	151						
16	49	75	98	117	135	152	167	182						
17	58	90	116	140	161	181	199	217						
18	68	106	137	165	190	213	235	256						
19	80	124	160	193	222	249	275	299						
20	92	144	186	223	257	289	318	347						
21		165	214	257	296	333	366	399						
22		189	245	294	339	380	420	457						
23		215	279	334	386	432	476	519						
24		243	315	378	436	489	540	588						
25		274	354	426	490	550	607	661						
26		307	397	476	550	617	679	740						
27		342	443	531	612	687	759	826						
28		380	492	590	681	764	843	916						
29		421	545	653	753	845	933	1014						
30		463	600	721	830	931	1028	1119						
31			659	792	912	1026	1130	1230						
32			723	867	1000	1122	1239	1349						
33			791	951	1094	1227	1355	1472						
34			861	1035	1191	1340	1476	1607						
35				1125	1297	1455	1607	1746						
36				1219	1406	1578	1742	1897						
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 88 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.62	.64	.66	.67
7	.69	.71	.73	.75	.77	.79	.81	.83	.85	.88
8	.90	.92	.95	.97	1.00	1.03	1.05	1.08	1.11	1.14
9	1.17	1.20	1.23	1.26	1.30	1.33	1.37	1.40	1.44	1.48

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 117 x 1.23 = 144 bd. ft.
Basic data: 88 trees from Pisgah and Nantahala National Forests; Tucker County, W. Va.; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.889611 (logarithm d.b.h. inches) + .635702 (logarithm merch. ht. ft.) + .011347 (O.B.-Form Class) - 3.325889.
Average deviation of individual tree volumes from values estimated by the equation: ±8.6 percent.
Aggregate difference: estimated values 0.37 percent low.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 59.-BASSWOOD

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	12	18	24	29	34	38								
11	16	25	32	39	45	51								
12	20	32	42	51	59	67	74	81						
13	26	41	54	65	76	85	94	103						
14	33	52	68	82	95	107	119	130	140	150				
15	41	64	84	102	118	133	147	161	174	186				
16	50	79	103	124	144	162	180	196	212	228				
17	60	95	124	150	173	195	216	237	255	274				
18	71	113	148	179	207	233	258	282	305	327	348			
19	85	133	175	211	244	276	306	333	361	386	412			
20	99	156	204	247	286	323	358	391	423	453	482			
21		182	238	287	333	376	416	454	491	526	561			
22		210	274	332	385	434	481	525	568	608	647			
23		241	315	381	442	498	551	603	650	698	743			
24		275	359	434	504	568	628	687	741	796	847			
25		312	407	493	572	644	713	778	841	904	962			
26		352	460	556	644	728	805	879	951	1019	1086			
27		395	516	625	724	817	906	989	1069	1146	1219			
28		443	578	700	811	914	1012	1107	1197	1282	1365			
29			644	780	904	1019	1127	1233	1334	1429	1521			
30			716	865	1002	1130	1253	1368	1479	1585	1690			
31			792	957	1109	1253	1387	1514	1637	1754	1871			
32			873	1057	1225	1380	1528	1671	1807	1936	2061			
33			962	1161	1346	1517	1683	1837	1986	2128	2270			
34				1274	1476	1667	1845	2014	2178	2333	2489			
35				1393	1614	1824	2018	2203	2382	2553	2723			
36				1521	1762	1986	2203	2404	2600	2786	2965			
37				1656	1919	2163	2393	2618	2831	3034	3228			
38				1799	2084	2350	2600	2844	3069	3296	3508			
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 140 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.49	.51	.53	.54
7	.56	.58	.60	.62	.64	.67	.69	.71	.74	.76
8	.79	.82	.85	.87	.90	.94	.97	1.00	1.04	1.07
9	1.11	1.15	1.18	1.22	1.27	1.31	1.36	1.40	1.45	1.50

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 124 x 1.18 = 146 bd. ft.
Basic data: 140 trees from Pisgah and Nantahala National Forests.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 3.090402 (logarithm d.b.h. inches) + .660895 (logarithm merch. ht. ft.) + .014679 (O.B.-Form Class) - 3.904780.
Average deviation of individual tree volumes from values estimated by the equation: ±9.9 percent.
Aggregate difference: estimated values 0.90 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
December 1941

TABLE 60.-WHITE ASH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6½	7
	Gross volume in board feet												
10	11	19	25	31	36	41							
11	15	25	33	41	48	55							
12	20	32	43	53	62	71							
13	25	40	54	67	78	89							
14	31	50	67	83	97	111	124						
15	38	62	83	102	119	136	152						
16	45	75	100	123	144	164	184						
17	54	89	119	147	173	197	220						
18	64	106	141	174	204	233	260	286					
19	75	124	166	204	239	273	305	336					
20	87	144	192	237	278	317	354	390					
21		166	222	273	321	366	408	450					
22		190	255	313	368	420	469	515	561	605			
23			290	356	419	478	533	588	640	690			
24			329	405	475	542	605	665	724	782			
25			371	456	536	611	682	750	817	881			
26			416	512	601	686	766	843	916	989			
27				572	671	766	855	942	1026	1104			
28				637	746	851	951	1047	1140	1230			
29				705	828	944	1054	1161	1265	1365			
30				778	914	1042	1164	1282	1396	1507			
31				857	1007	1148	1282	1413	1538	1660			
32				942	1104	1259	1409	1549	1687	1820			
33				1030	1211	1380	1542	1698	1845	1991			
34				1125	1321	1507	1683	1854	2018	2173			
35				1225	1439	1641	1832	2018	2198	2366			
36				1330	1563	1782	1991	2193	2382	2570			
37													
38													
39													
40													
41													
42													
43													
44													
45													
46													
47													
48													

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Block indicates extent of basic data for all O.B.-Form Classes.
Table above is for the average O.B.-Form Class of the 52 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.51	.53	.55	.57	.60	.62	.65	.67	.70	.73
8	.76	.79	.82	.85	.89	.92	.96	1.00	1.04	1.08
9	1.13	1.17	1.22	1.27	1.32	1.37	1.43	1.49	1.54	1.61

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 123 x 1.22 = 150 bd. ft.
Basic data: 52 trees from Pisgah and Nantahala National Forests and Tucker County, West Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.936875 (logarithm d.b.h. inches) + .719353 (logarithm merch. ht. ft.) + .017201 (O.B.-Form Class) - 4.031653.
Average deviation of individual tree volumes from values estimated by the equation: ±8.8 percent.
Aggregate difference: estimated values 1.47 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell

TABLE 61.-WHITE PINE AND HEMLOCK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 83

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	13	20	25	30										
11	17	25	32	39	44									
12	21	32	41	49	56	63								
13	26	40	51	61	70	78	86							
14	32	49	63	75	86	96	105	114						
15	39	59	76	91	104	116	127	138	148					
16	47	71	91	108	124	138	152	165	177	189				
17	55	84	107	128	146	163	180	194	209	223				
18	64	98	125	149	171	191	210	228	245	261				
19	75	114	146	173	199	222	244	264	284	303				
20	86	131	168	200	229	255	280	304	327	348				
21	98	150	191	228	261	292	321	348	374	398	423			
22	112	170	218	259	297	332	365	395	425	453	480			
23	126	192	246	293	336	375	412	447	480	512	542			
24	142	216	277	330	377	422	462	502	540	575	610	643		
25		242	309	368	422	471	518	561	603	643	681	718		
26		269	344	410	470	525	577	625	671	716	759	800	840	
27		298	382	455	521	582	640	693	745	794	843	887	933	
28		330	423	504	577	644	708	767	824	879	931	982	1030	1079
29		363	466	555	637	710	778	843	908	968	1026	1081	1135	1186
30		399	510	608	697	778	855	927	995	1062	1125	1186	1245	1303
31		436	558	665	762	851	935	1014	1089	1161	1230	1297	1361	1426
32		476	610	726	832	929	1021	1107	1189	1268	1343	1416	1486	1556
33		519	664	791	904	1012	1109	1205	1294	1380	1462	1542	1614	1690
34			719	857	982	1096	1205	1306	1406	1496	1589	1675	1758	1837
35			780	929	1064	1189	1306	1416	1521	1622	1718	1811	1901	1991
36			843	1005	1148	1285	1409	1528	1644	1754	1858	1959	2056	2148
37			908	1081	1239	1384	1521	1648	1770	1888	2000	2109	2218	2317
38				1164	1334	1489	1637	1774	1905	2032	2153	2270	2382	2495
39				1250	1432	1600	1758	1905	2046	2183	2312	2438	2559	2679
40				1340	1535	1714	1884	2042	2198	2339	2477	2618	2748	2871
41				1435	1644	1837	2014	2188	2350	2506	2655	2799	2938	3076
42				1531	1754	1959	2153	2333	2512	2673	2838	2992	3141	3281
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 322 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.67	.69	.71	.73	.76	.78	.81	.83	.86	.88
8	.91	.94	.97	1.00	1.03	1.06	1.10	1.13	1.17	1.20
9	1.24	1.28	1.32	1.36	1.40	1.45	1.49	1.54	1.59	1.64

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 108 x 1.32 = 142 bd. ft.
Basic data: 322 trees from Cherokee, Pisgah and Nantahala National Forests; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.747583 (logarithm d.b.h. inches) + .608102 (logarithm merch. ht. ft.) + .013381 (O.B.-Form Class) - 3.305406.
Average deviation of individual tree volumes from values estimated by the equation: White pine ±7.6 percent; Hemlock ±8.4 percent.
Aggregate difference: estimated values - White pine 0.45 percent low; Hemlock 0.98 percent high.

APPALACHIAN FOREST EXPERIMENT STATION

J. H. Buell
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TABLE 62.--LOBLOLLY PINE AND YELLOWPOPLAR

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 87

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	11	16	21	25	29	32	35	38						
11	15	22	28	34	39	43	47	51						
12	19	29	37	44	51	57	62	68	73					
13	25	38	48	57	65	73	80	87	94	100				
14	31	47	61	72	83	92	102	110	118	126	134			
15	39	59	76	90	103	115	126	137	147	157	166	175		
16	47	72	92	110	126	141	155	168	180	192	204	215		
17	58	88	112	133	153	171	188	203	219	233	247	260		
18		105	134	160	183	205	225	244	262	279	296	312		
19		124	160	190	217	243	267	289	311	331	352	370		
20		147	188	223	256	286	313	340	366	390	413	436		
21		171	219	261	298	333	366	397	427	455	482	508		
22		198	254	302	345	386	424	459	494	527	558	589		
23			292	348	398	445	488	530	569	607	643	678		
24			333	397	455	508	558	605	650	693	734	774		
25			379	452	518	578	635	689	740	789	836	881		
26			430	512	586	655	719	780	838	893	946	998		
27			484	577	661	738	811	879	944	1007	1067	1125		
28			543	647	741	828	910	986	1059	1130	1197	1262		
29			607	723	828	925	1016	1102	1183	1262	1337	1409		
30			676	805	923	1030	1132	1227	1318	1406	1489	1570		
31			750	893	1023	1143	1256	1361	1462	1560	1652	1742		
32				986	1130	1262	1387	1503	1614	1722	1824	1923		
33				1089	1247	1393	1528	1660	1782	1897	2014	2123		
34				1197	1371	1531	1683	1824	1959	2089	2213	2333		
35				1312	1500	1679	1841	2000	2148	2291	2427	2559		
36				1432	1641	1832	2014	2183	2344	2500	2649	2793		
37				1563	1791	2000	2198	2382	2559	2729	2891	3048		
38				1702	1945	2178	2388	2588	2786	2965	3148	3311		
39					2113	2360	2594	2812	3020	3221	3412	3597		
40					2291	2559	2812	3048	3273	3491	3698	3899		
41					2477	2767	3041	3296	3540	3776	3999	4217		
42					2667	2985	3281	3556	3819	4074	4315	4550		
43						3214	3532	3828	4111	4385	4645	4898		
44						3459	3802	4121	4426	4721	5000	5272		
45						3715	4074	4426	4753	5058	5370	5662		
46						3981	4375	4742	5093	5433	5754	6067		
47								5070	5445	5808	6166	6486		
48								5420	5821	6209	6577	6934		

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Table above is for the average O.B.-Form Class of the 712 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.46	.48	.49	.51
7	.53	.55	.57	.59	.62	.64	.66	.69	.72	.74
8	.77	.80	.83	.86	.90	.93	.96	1.00	1.04	1.08
9	1.12	1.16	1.20	1.25	1.30	1.35	1.40	1.45	1.51	1.56

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 110 x 1.20 = 132 bd. ft.

Basic data: 712 trees - Yellowpoplar from Geo. Washington, Cherokee, Pisgah and Nantahala National Forests; Jackson County, Ohio; Tucker County, W. Va.; Bland County, Virginia; and Chatham County, N. C. Loblolly pine from Piedmont and northern coastal plain counties of South Carolina.

Table constructed from the equation:

Logarithm Doyle-Scribner bd. ft. vol. = 3.162655 (logarithm d.b.h. inches) + .607856 (logarithm merch. ht. ft.) + .016156 (O.B.-Form Class) - 4.091264.

Average deviation of individual tree volumes from values estimated by the equation: Loblolly pine ±9.9 percent; Yellowpoplar ±10.1 percent.

Aggregate difference: estimated values - Loblolly pine 0.22 percent high; Yellowpoplar 10.51 percent high.

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December 1941

TABLE 63.-SHORTLEAF PINE AND VIRGINIA PINE

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 87

DBH	Number of 16.3-foot logs												
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	13	21	27	32	37	42	46	50						
11	18	28	37	44	51	57	63	68	74	79	84			
12	24	38	49	58	67	76	83	90	98	104	111			
13	31	49	63	76	87	98	108	117	126	135	143			
14	40	62	80	96	110	124	137	149	160	171	182			
15	50	77	100	120	138	155	171	186	200	214	228			
16	61	95	123	148	170	190	210	229	247	264	280			
17	74	116	149	179	206	232	255	278	299	321	340			
18	90	139	180	216	248	279	308	334	361	386	409			
19	107	166	214	256	296	332	366	398	428	458	488			
20	126	195	252	303	348	391	432	469	506	541	574			
21		228	295	354	407	458	505	550	592	632	671			
22		266	343	411	474	532	586	638	687	734	780			
23			395	474	547	614	676	736	792	847	902			
24			454	544	627	703	776	845	910	973	1033			
25			518	621	714	802	885	964	1038	1109	1178			
26				705	811	912	1005	1094	1178	1259	1337			
27				796	916	1028	1135	1233	1330	1422	1510			
28				895	1030	1156	1276	1387	1496	1600	1698			
29				1002	1153	1294	1429	1552	1675	1791	1901			
30				1117	1285	1445	1592	1734	1866	1995	2118			
31				1242	1432	1607	1770	1928	2075	2218	2355			
32				1374	1585	1778	1959	2133	2296	2455	2606			
33				1517	1750	1963	2163	2355	2535	2716	2884			
34				1671	1928	2163	2382	2594	2793	2985	3177			
35				1837	2113	2371	2618	2851	3069	3281	3483			
36				2009	2317	2600	2864	3119	3357	3589	3819			
37														
38														
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 503 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6										
7	.56	.58	.60	.62	.64	.66	.69	.71	.73	.76
8	.79	.81	.84	.87	.90	.93	.97	1.00	1.04	1.07
9	1.11	1.15	1.19	1.23	1.27	1.32	1.36	1.41	1.46	1.51

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 148 x 1.19 = 176 bd. ft.
Basic data: 503 trees from Cherokee and Nantahala National Forests and northeastern South Carolina.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 3.221276 (logarithm d.b.h. inches) + .633376 (logarithm merch. ht. ft.) + .014844 (O.B.-Form Class) - 3.959952.
Average deviation of individual tree volumes from values estimated by the equation: Shortleaf pine ±8.5 percent; Virginia pine ±8.8 percent.
Aggregate difference: estimated values - Shortleaf pine 4.75 percent high; Virginia pine 4.60 percent low.

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TABLE 64.-SUGAR MAPLE, RED MAPLE AND SWEET BIRCH

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 84

DBH	Number of 16.3-foot logs												
	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
In.	Gross volume in board feet													
10	11	18	24	29	33									
11	15	24	31	38	44	50								
12	19	31	40	49	56	64	71	77	84	90	96			
13	24	39	51	61	71	80	89	97	105	113	120			
14	30	48	63	76	88	100	110	120	130	140	149			
15	37	58	76	92	107	121	135	147	159	171	182			
16	44	70	92	111	129	146	162	177	191	206	219			
17	53	84	109	133	154	174	193	211	228	244	261			
18	62	99	129	156	182	205	228	248	268	288	308			
19	72	115	151	183	212	240	266	290	314	337	359			
20	84	133	175	212	246	277	308	336	364	391	416			
21	97	154	201	244	283	319	354	387	419	449	479			
22	110	175	230	279	324	365	405	443	479	514	547			
23	126	200	261	316	367	415	460	502	544	583	622			
24	142	225	295	358	415	469	520	569	615	659	703			
25		254	332	403	467	527	585	640	692	741	791			
26		284	372	451	522	590	655	716	774	832	885			
27		316	415	502	583	659	730	798	863	927	986			
28		352	460	557	647	731	811	885	959	1028	1096			
29		388	509	617	716	809	897	980	1059	1138	1213			
30		428	561	679	789	891	989	1079	1169	1253	1337			
31		471	617	748	867	980	1086	1186	1285	1377	1469			
32		515	676	818	951	1074	1189	1300	1406	1510	1607			
33		564	738	895	1038	1172	1300	1422	1538	1648	1758			
34		614	805	975	1132	1279	1416	1549	1675	1799	1914			
35		667	875	1059	1230	1390	1542	1683	1820	1954	2084			
36		724	948	1148	1334	1507	1671	1824	1977	2118	2259			
37		783	1026	1245	1442	1629	1807	1977	2138	2291	2443			
38		845	1109	1343	1560	1762	1950	2133	2307	2477	2636			
39		912	1194	1445	1679	1897	2104	2296	2489	2667	2844			
40		980	1285	1556	1807	2042	2259	2472	2673	2871	3055			
41		1052	1380	1671	1941	2188	2427	2655	2871	3069	3281			
42		1127	1479	1791	2080	2344	2600	2844	3076	3304	3516			
43		1208	1581	1914	2223	2512	2786	3041	3296	3532	3767			
44					2377	2679	2979	3251	3516	3776	4027			
45					2535	2864	3177	3467	3750	4027	4285			
46					2704	3048	3381	3698	3999	4285	4571			
47					2871	3243	3597	3926	4256	4560	4864			
48					3048	3443	3819	4178	4519	4842	5164			

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 247 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) Factors									
	0	1	2	3	4	5	6	7	8	9
5										
6			.55	.56	.58	.59	.61	.63	.64	.66
7	.68	.70	.72	.74	.76	.78	.80	.82	.85	.87
8	.90	.92	.95	.97	1.00	1.03	1.06	1.09	1.12	1.15
9	1.18	1.21	1.25	1.28	1.32	1.36	1.39	1.43	1.47	1.51

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 111 x 1.25 = 139 bd. ft.
Basic data: 247 trees from Pisgah and Nantahala National Forests; Tucker County, W. Va.; and Bland County, Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 2.877373 (logarithm d.b.h. inches) + .667400 (logarithm merch. ht. ft.) + .011960 (O.B.-Form Class) - 3.432235.
Average deviation of individual tree volumes from values estimated by the equation: Sugar maple ±10.8 percent; Red maple ±10.5 percent; Sweet birch ±8.3 percent.
Aggregate difference: estimated values - Sugar maple 9.94 percent high; Red maple 5.85 percent low; Sweet birch 1.96 percent high.

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TABLE 65.-WHITE OAK, CHESTNUT OAK, EASTERN RED OAK, BLACK OAK, AND SCARLET OAK

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 85

DBH	Number of 16.3-foot logs											
In.	½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	11	18	24	29	34	38								
11	15	24	31	38	44	50	56							
12	19	31	40	49	57	65	72	78						
13	24	39	51	62	72	81	90	99						
14	30	48	63	77	89	101	112	122	133					
15	37	59	77	94	109	123	137	150	162					
16	44	71	93	113	131	149	165	180	195	209				
17	53	84	111	135	156	177	196	215	232	250				
18	62	100	131	159	184	209	232	254	274	294				
19	73	116	153	186	216	244	271	296	321	344				
20	85	135	177	215	251	283	314	344	372	399				
21	98	156	204	248	288	326	361	395	428	460				
22	111	178	234	284	330	373	414	453	490	526				
23	127	202	266	323	375	424	470	515	557	598				
24	144	229	301	365	425	480	532	582	631	676				
25	161	258	338	410	478	540	598	655	710	762				
26	181	288	379	460	535	605	671	734	794	853				
27	202	322	423	513	597	674	748	818	887	951				
28	224	357	470	570	662	750	832	910	984	1057				
29		395	520	631	733	830	920	1007	1089	1169				
30		436	573	695	809	914	1014	1109	1202	1291				
31		480	631	766	889	1007	1117	1222	1321	1419				
32		526	690	840	975	1102	1222	1337	1449	1556				
33		562	755	895	1042	1178	1306	1429	1549	1660				
34		627	824	1000	1161	1315	1459	1596	1726	1854				
35		682	895	1086	1265	1429	1585	1734	1879	2014				
36		740	970	1180	1371	1549	1718	1879	2037	2188				
37		800	1052	1276	1483	1679	1862	2037	2203	2366				
38			1135	1380	1603	1811	2009	2198	2382	2559				
39			1225	1486	1730	1954	2168	2371	2570	2754				
40			1318	1600	1858	2104	2333	2553	2767	2965				
41				1718	1995	2259	2506	2742	2965	3184				
42				1841	2138	2421	2685	2938	3177	3412				
43				1972	2291	2594	2877	3148	3404	3656				
44				2109	2449	2767	3076	3365	3639	3908				
45				2249	2612	2958	3281	3589	3882	4169				
46				2399	2786	3148	3499	3819	4140	4446				
47				2553	2965	3350	3715	4064	4406	4732				
48				2710	3148	3565	3954	4325	4677	5023				

Volume as utilized, to a variable top diameter.

O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.

Table above is for the average O.B.-Form Class of the 1802 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5	.37	.38	.39	.40	.41	.42	.44	.45	.46	.48
6	.49	.50	.52	.53	.55	.56	.58	.60	.62	.63
7	.65	.67	.69	.71	.73	.75	.77	.80	.82	.84
8	.87	.89	.92	.94	.97	1.00	1.03	1.06	1.09	1.12
9	1.15	1.19	1.22	1.26	1.29	1.33	1.37	1.41	1.45	1.49

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 113 x 1.22 = 138 bd. ft.

Basic data: 1802 trees from Cherokee, Pisgah, Nantahala, and Chattahoochee National Forests; Jackson County, Ohio; Garrett County, Maryland; Hardy and Tucker Counties, W. Va.; Bland County, Virginia and Chatham County, North Carolina.

Table constructed from the equation:

Logarithm Doyle-Scribner bd. ft. vol. = 2.892515 (logarithm d.b.h. inches) + .673880 (logarithm merch. ht. ft.) + .012399 (O.B.-Form Class) - 3.503653.

Average deviation of individual tree volumes from values estimated by the equation: White oak ±10.9 percent; Chestnut oak ±8.6 percent; Eastern red oak ±9.7 percent; Black oak ±7.1 percent; Scarlet oak ±8.1 percent.

Aggregate difference: estimated values - White oak 3.21 percent low; Chestnut oak 6.11 percent high; Eastern red oak 5.67 percent high; Black oak 2.06 percent high; Scarlet oak 4.47 percent low.

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J. H. Buell
December 1941

TABLE 66.-WHITE ASH AND BASSWOOD

O.B.-FORM CLASS VOLUME TABLE

BOARD FEET DOYLE-SCRIBNER LOG RULE

O.B.-FORM CLASS 87

DBH In.	Number of 16.3-foot logs: ½	1	1½	2	2½	3	3½	4	4½	5	5½	6	6½	7
	Gross volume in board feet													
10	12	19	25	30	35	40								
11	15	25	33	40	47	53								
12	20	32	43	52	61	69	76	84						
13	25	41	54	66	77	87	97	107						
14	32	51	68	83	96	109	121	133	144	155				
15	39	63	83	102	119	135	150	164	178	191				
16	47	77	101	124	144	163	182	199	216	232				
17	57	92	122	148	173	196	218	239	259	279				
18	68	109	144	176	206	233	259	284	308	331	354			
19	80	128	170	208	242	274	305	334	363	390	417			
20	93	150	198	242	282	320	356	390	424	455	486			
21		174	230	280	327	371	412	452	491	527	564			
22		200	264	322	376	427	474	520	564	607	649			
23		229	302	368	430	488	542	594	646	693	741			
24		259	344	419	489	555	617	676	733	789	843			
25		294	388	474	552	627	697	764	830	891	953			
26		330	438	533	622	706	785	861	933	1005	1072			
27		371	490	597	697	791	879	964	1047	1125	1202			
28		413	547	667	778	883	982	1076	1167	1256	1340			
29			608	741	865	982	1091	1197	1297	1396	1489			
30			673	820	957	1086	1208	1324	1435	1545	1652			
31			743	906	1057	1199	1334	1462	1585	1706	1824			
32			817	998	1164	1318	1466	1607	1746	1875	2004			
33			897	1094	1276	1449	1611	1766	1914	2061	2198			
34				1197	1396	1585	1762	1932	2094	2254	2410			
35				1306	1524	1730	1923	2109	2286	2460	2630			
36				1422	1660	1879	2094	2296	2489	2679	2858			
37				1545	1803	2042	2275	2495	2704	2911	3105			
38				1675	1954	2213	2466	2704	2931	3148	3365			
39														
40														
41														
42														
43														
44														
45														
46														
47														
48														

Volume as utilized, to a variable top diameter.
O.B.-FORM CLASS: Diameter outside bark at top of first 16.3-foot log divided by diameter outside bark at breast height, the result being multiplied by 100.
Table above is for the average O.B.-Form Class of the 192 sample trees used. Factors in table below are to be used to get volumes for other O.B.-Form Classes.

MULTIPLIERS FOR OTHER O.B.-FORM CLASSES

Factors by which to multiply volumes in the above average table to obtain volumes for other O.B.-Form Classes

O.B.-Form Class (Tens)	(Units) 0	1	2	3	4	5	6	7	8	9
	Factors									
5										
6							.46	.48	.50	.52
7	.54	.56	.58	.60	.62	.64	.67	.69	.72	.74
8	.77	.80	.83	.86	.90	.93	.96	1.00	1.04	1.08
9	1.12	1.16	1.20	1.25	1.29	1.34	1.39	1.44	1.50	1.55

Example: Volume of 16", 2-log tree of O.B.-Form Class 92 = 124 x 1.20 = 149 bd. ft.
Basic data: 192 trees from Pisgah and Nantahala National Forests and Tucker County, W. Virginia.
Table constructed from the equation:
Logarithm Doyle-Scribner bd. ft. vol. = 3.013638 (logarithm d.b.h. inches) + .690124 (logarithm merch. ht. ft.) + .015940 (O.B.-Form Class) - 3.968214.
Average deviation of individual tree volumes from values estimated by the equation: White ash ±9.0 percent; Basswood ±10.8 percent.
Aggregate difference: estimated values - White ash 3.01 percent high; Basswood 1.19 percent low.

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J. H. Buell
December 1941